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OBSERVATIONS

ON THE

DISEASES

WHICH PREVAIL IN

LONG VOYAGES TO HOT COUNTRIES,

PARTICULARLY ON THOSE

IN THE EAST INDIES;

AND ON THE SAME

DISEASES

AS THEY APPEAR

IN GREAT BRITAIN.

BY

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T O
THE HONOURABLE
COURT OF DIRECTORS
OF THE HONOURABLE
UNITED COMPANY
O F
MERCHANTS IN ENGLAND

TRADING TO
THE EAST INDIES;
THE FOLLOWING
OBSERVATIONS,
FIRST PUBLISHED BY THEIR ORDER,

ARE AGAIN,
IN THIS IMPROVED EDITION,

HUMBLY INSCRIBED

B Y
THE AUTHOR.

PREFACE

THE first edition of the work was published in 1773, at the request of Sir John VESTER, who, at that time, of the medical council of the East India Company. The materials of which it was composed, were the result of science and attentive observation, and served to beguile a vacant hour and amuse them.

The favourable opinion on the work met with on its first appearance, and the consequent applications for another impression, for some years past, have induced the author to revise this edition with all the care and attention in his power, and to make such alterations and additions as he hopes will render his account still more acceptable.

The following edition is divided into three parts:

The first contains an account of the weather and climates which attend the two voyages to India; together with topographical descriptions of the islands and



T H E

P R E F A C E.

THE first edition of the following work was published, in the year 1773, at the request of Sir JOHN SILVESTER; who, at that time, presided over the medical concerns of the East India Company. The materials, of which it was composed, were the result of experience and attentive observation; and it served to beguile the tediousness of many a vacant hour at sea, to collect and arrange them.

The favourable reception the work met with on its first appearance, and the frequent applications for another impression, for some years past, have induced the author to revise this edition with all the care and attention in his power, and to make such alterations and additions, as, he hopes, will render his labours still more acceptable.

The following edition is divided into three parts.

The first contains an account of the weather and diseases which occurred in two voyages to India; together with short topographical descriptions of the islands,
and

and various places on the continent of Asia, frequented by Europeans. This part being intended for the perusal of Gentlemen in general, minute descriptions of diseases are purposely avoided; it being only judged necessary to point out the prevailing epidemics, so far as they seemed to be influenced by situation, climate, changes of the seasons, and other circumstances.

In the second part, intended for the use of medical Gentlemen only, the description of the prevailing diseases is minutely entered upon; and the methods of treatment, which were found most successful, placed in as clear a point of view as possible for the benefit of those, who are only entering upon the profession.

The opportunities the author has had of making observations, in different parts of the globe, convince him that diseases, in every climate, are respectively the same; and, when attended with danger or malignity, are only to be subdued by the same treatment. In this part of the work, therefore, he has availed himself of the advantages he has enjoyed for eighteen years past (in private practice; at the Dispensary, and at the Infirmary of Newcastle) of confirming the efficacy of the methods of treatment formerly proposed, and

and also, he hopes, of offering farther improvements.

The chapter on Fevers occupies a very considerable portion of this part of the work. The subject, however, is important; and the author could not, in a smaller compass, give a full view of the practice he would wish to recommend.

Although the treatment proposed in the former edition of this work, and afterwards in a subsequent publication,* so far as it respects the early and liberal use of the bark, has not been generally adopted; yet several Physicians of great reputation have, in their writings, inculcated the propriety of a similar practice, which they had followed with success in different parts of the world. Among those the following hold the most distinguished rank—Dr. Millar † has found it to succeed in Great Britain; Dr. Sandiford ‡ in the island of Barbadoes; Dr. Sims || in Ireland; Dr. Lettsom § in London; Dr. Robertson ¶ in Africa, America, and Europe; and Dr. Balfour** in Bengal.

The dysentery, next to fevers, being the most fatal disease to Europeans in hot cli-

* *Clark on Fevers* 1730 — † *Diseases of Great Britain published in 1779: And Diseases of the Army and Navy* 1784.

— ‡ *Medical Obs.* Vol. IV. 1771. — || *Epidemic Diseases* 1773.

— § *Medical Memoirs* 1774. — ¶ *Physical Journal* 1777. — *Observations on the Ship Fever* 1789: and an *Essay on Fevers* 1790.

— ** *Influence of the Moon in Fevers* 1785.

climates, is also treated at full length. And, should it resist the common method, the author has proposed the trial of mercury, from which, in this country, he has experienced the best effects.

The other diseases are passed over in a more cursory manner. The author, however, has not omitted to mention any thing, which his experience has confirmed, relative to their cure: and in the tetanus, in which he has had few opportunities of making observations, he has introduced remarks from the most approved writers on the subject.

In the postscript to this part, he has given a report of the success of the practice in fevers, for fifteen years, on board the India ships; which, he flatters himself, will afford the most convincing evidence of the superiority of the treatment, which he proposed in the first edition.

To prevent the frequent repetition of prescriptions, recommended in this part of the work, they are numbered, and placed in the Appendix.—Thus, when the reader finds the powder, N^o. 5, directed, as at page 182, by turning to the *Formula Medicamentorum* in the Appendix, he will see the prescription opposite to N^o. V.—and so of any of the rest which may occur in any other page.

In

In the former edition, the prescriptions were translated into English for the benefit of those, who might not have it in their power to call in medical advice. But, the author being confirmed in opinion, that, in the hands of the generality, prescriptions are often mistaken, and consequently do much harm, he has not done it in this impression. To Europeans entering on a distant voyage, when no Surgeon is on board, he would, therefore, recommend, that they should take a few prescriptions, compounded by their Apothecary, accompanied with such directions as may render their administration safe.

The third part of the work, like the first, is not limited to the medical profession alone; but is also intended for the use of officers on whom the prevention of diseases chiefly depends. For seamen and soldiers, so far as their health is concerned, can only be considered as adult children, who require authority to prevent them from doing themselves harm.

Although the dictates of humanity and the love of the service are sufficient inducements with British officers to attend to the health of their men; yet unfortunately they have, in general, considered it the province of the medical department alone. And many Surgeons must acknowledge how often they have had occasion to regret,
a that

that they have been foiled in preventing the prevalence and mortality of diseases, not only by the obstinacy and prejudices of the men; but also, not unfrequently, by the inattention or neglect of their superiors.

To remedy these evils, the author has proposed, that *regulations of health* should be given to the officers, in every service, as *instructions*; and that they should be made *responsible* for carrying them into execution.

In this edition, at page 500, the author has proposed some important improvements of the Medical Journals of the East India ships, which he humbly submits to the consideration of the DIRECTORS. The same attention should be paid to those in the Royal Navy; which, from the defective manner in which they have been kept, except in a few instances, have been of no public utility. But the author is persuaded, if in both services *instructions* be given to the commanders; if the *improvements of the Journals* be adopted; and if the *bark* be provided for the Royal Navy, that the prevention and cure of diseases will attain to greater perfection; that the health of seamen and soldiers will be preserved in times of public tranquillity; and that future wars will be carried on with an immense saving of lives and of treasure to the nation.

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JOHN CLARK, M. D. &c. &c.

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THE EPIPHANY OF THE LORD
ON THE TWELFTH DAY OF JANUARY
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PART I
GENERAL OBSERVATIONS
ON THE
WEATHER AND DISEASES
IN
LONG VOYAGES TO HOT COUNTRIES,
AND IN
VARIOUS PLACES OF THE EAST INDIES.

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1861. It is a formal address, and it is the first of its kind since the signing of the Constitution. The President, James Buchanan, is addressing the Congress, and he is doing so in a very formal and dignified manner. He is discussing the state of the Union, and he is also discussing the issue of slavery. He is saying that the Union is in a state of crisis, and that he is doing everything in his power to maintain it. He is also saying that he is not going to allow the Union to be divided over the issue of slavery.

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THE

PART I.
GENERAL OBSERVATIONS

ON THE
WEATHER AND DISEASES

IN
LONG VOYAGES TO HOT COUNTRIES, &c.

CHAP. I.

A GENERAL ACCOUNT OF THE WEATHER AND DISEASES IN A VOYAGE FROM ENGLAND TO BENGAL, IN THE YEAR 1768, AND IN RETURNING IN THE YEAR 1769.

THE Talbot Indiaman, Sir Charles Hudson, Bart. Commander, sailed from the Downs the 22d of March, 1768, and arrived at her moorings, in the river of Bengal, the 25th of August. There were embarked in all two hundred and forty men: one hundred and eight belonged to the ship; the rest were passengers and military recruits for India.

The month of March, till the 26th, was very cold and intemperate, with easterly winds: during the remainder of the month, the winds were westerly; and the weather still continued raw and uncomfortable, with fogs at night. Our passage down the Channel was favourable, and we soon arrived in more temperate latitudes, making the island of Madeira on the 6th of April.

* Rainy days, 1 ; 16 . . ; 25 ; 27, 28 ; 30 . . .

March 23, lat. 49 deg. 18 min. N. 30 day, 43 deg. 37 min. N. 11 5

The complaints of this month consisted of catarrhal fevers, with hard coughs, and stitches in the sides. Some had sore throats: a few were afflicted with the rheumatism, and other diseases, the consequences of catching cold. These complaints were relieved by bleeding, antimonials, in small doses, diluent pectorals, opiates, and blisters; and totally disappeared with the warm weather. Two of the rheumatic cases were very obstinate; the symptoms continuing

* The quantity of rain is denoted by dots: slight showers or heavy falls of rain in proportion to the number of dots.

tinuing for many months, although a variety of medicines were tried. At last, the pains, which became fixed to the joints, were removed by rubbing mercurial ointment upon the parts affected*.

April, from the beginning till the 17th, was warm, dry, and temperate. The north-east trade wind † was favourable and steady. From this to the end of the month, light winds and frequent calms prevailed: the weather became excessively sultry;

* See Chapter on the Rheumatism.

† The perpetual winds betwixt the tropics, which have got the name of trade-winds from their being so regular, and consequently so useful in navigation, seem to have a considerable influence upon the health of seamen. These winds cool and refresh the air, which otherwise would be insupportable. While they are steady, in every voyage, I have observed the seamen enjoy an uninterrupted state of health; but as soon as they cease, the air becomes hot and suffocating, and diseases more or less prevail.

Between the tropics, where the heat of the sun is not only intense but constant, these winds observe great regularity, and are easterly all the year round; but on each side of the line they vary a little, and are north-east on the north side, and south-east on the south.

The trade-winds generally extend to the 28th degree of latitude, on either side of the line, but as they come near the equator disappear, and variable winds and calms take place. What is said here is only to be understood of the open sea; for near the shores there are many circumstances which alter the regularity of these winds.

fultry; but the heat of the vertical sun was, in a good measure, obstructed by a clouded sky.

Rainy days, 21 . . ; thunder and lightning, 23, 27 . ; squally.

April 1, in lat. 40 deg. 36 min. N. 10 day, lat. 25 deg. 52 min. N. 20 day, lat. 5 deg. 49 min. N. 30 day, lat. 2 deg. 41 min. N.

From the beginning to the 10th of May; the heat of the weather rather increased, although the trade wind continued pretty brisk. From this till the 20th, pleasant breezes prevailed, with some intermediate days of calm; and as we daily increased our latitude, and had frequent showers, the air became very temperate. To the end of the month we had fresh gales, cold, wet, and squally weather.

Rainy days, 5, 7, 9, 10 . ; 11 . . . ; 14, 17 . ; 18 . . . ; 20, 24, 25 . ; 26 . . ; 27, 29, . ; 30 . . .

May 10, lat. 17 deg. 24 min. S. 20 day, lat. 29 deg. 26 min. S. 20 day, 34 deg. 31 min. S.

Towards the latter end of last month and beginning of this, many of the ship's crew were seized with remittent fevers.

The

The disease was generally ushered in with slight shivering, bitter taste in the mouth, head-ach, pain above the eye-brows; sickness, vomiting, and sometimes a purging of gall succeeded. The pulse at first was very quick, but soft, the countenance flushed, the skin very hot, and the thirst intense. The fever generally remitted, and in the most continued form, exacerbations were evident at night. When the patient did not neglect his case, the disease was easily cured; however, three escaped with difficulty. The cure depended on cleansing the stomach and bowels, by small doses of tartar emetic*, which indeed often removed the fever in a few hours; or, when it came to remit, it readily yielded to the bark. The disease did not require bleeding; for in a few days it was accompanied with great prostration of strength and spirits. In such cases, the bark and wine were given freely, with the best effect, without paying regard to the remissions or exacerbations of fever.

In June, we were in the high latitudes, off the Cape of Good Hope, and found

A 4

the

* Antimonium Tartarizatum.

the weather cold and disagreeable, and the atmosphere hazy and moist. Towards the end of the month, the weather became more dry and temperate, with light breezes from the southward.

Rainy days, 1, 2, 3, 4 . . . 5, 6, 7, 8, 12 . . . , with thunder and hard squalls; 13, 17 . . . 18, 19 . . . 22, 23, 24, 25 . . .

June 1, lat. 34 deg. 35 min. S. 10 day, 35 deg. 33 min. S. 20 day, 32 deg. 9 min. S. 30 day, 23 deg. 19 min. S.

In the beginning of the month, the scurvy made its appearance; only six or eight were affected. The symptoms proceeded to no great length, except in two of the soldiers. As the disease advanced, their ham-strings became affected; they were subject to profuse hemorrhages from the nose and gums; and one of them frequently fainted upon the least motion. They were plentifully supplied with wine, sugar, &c. and had the usual sea medicines: The disease, however, daily encreased; and all which these remedies seemed to effect, was barely to keep the patients alive till we arrived at Madagascar. Besides this complaint, three of the soldiers laboured

laboured under a fever, attended with a low sunk pulse, of which one died.

Upon the first of July we anchored at St. Augustine's Bay, Madagascar. This large island extends from 12 to 26 degrees south latitude, and abounds with all sorts of refreshments. The climate is healthy; the air dry. The appearance of the country about the bay is unpromising; nothing presenting itself to the eye but craggy precipices, and a swampy valley beset with woods, and watered by a river which overflows each tide. A stranger, however, must not draw a picture of the island from this unfavourable confined spot; for, about a mile up the river, the ground is high and clear of woods. The country a little inland is extremely fertile, and affords a variety of agreeable landscapes, for which they are entirely indebted to nature, the male inhabitants making no improvements in husbandry, which is here the province of the females. But nature seems to produce every thing almost spontaneously. The vegetable productions are good, and in great abundance, such as rice, India corn, sugar-cane, sweet potatoes, melons, pumpkins, oranges, &c.

In

In this island, there is a breed of very fine and large cattle. The mutton and fowls are good; and there is great variety and plenty of fish.

From April till November, the weather is dry, clear, calm, and sultry; but the heat of the climate is tempered by sea and land breezes, regularly succeeding one another. And such is the happy situation of this island, that on one side it enjoys the perpetual trade-winds, and on the other the monsoon. During the above period, Europeans enjoy good health at the bay; and, at that time, it ought to be preferred to every other place of refreshment, after passing the delightful settlements of the Cape of Good Hope.

The rainy season here commences about November, and seldom continues longer than March; during which time, the atmosphere is dark, gloomy, and boisterous; and much rain falls. From the accounts of ships that have touched here during this period, we are told, that the climate is very unhealthy, and fatal to Europeans. The situation of the bay makes it evident, that this must be the case at that place; but as the villages of the natives, though
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at no great distance from the valley, are situated on high ground, they enjoy uninterrupted health all the year round. And, indeed, the hale vigorous constitution of the inhabitants; their long life; and total exemption from all chronic diseases; are sufficient evidences of the salubrity of the island.

Ships which are obliged, through stress of weather or sickness, to put in here, during the rainy season, should have their sick tent erected two miles up the river, near the village of the natives, where the land is high; or the sick may be put daily ashore, at Tent Rock, opposite to the place where ships usually anchor, to take exercise, and have the benefit of the land air in the day-time, care being taken that they return to the ships before the evening dews happen, which, at this period, are very considerable. Thus the bad effects of nocturnal air, so productive of diseases, in many situations, in hot climates, will be prevented. However, no such precautions are necessary in the dry season.

We sailed from St Augustine's Bay the 5th of July: till the 17th, the weather was

was calm, the air moist and suffocating; and from that till the end of the month, we had pleasant gales, hazy, and very sultry weather.

Rainy, 16th; 17th; 18th; 25, 26th; 27.

July 1, lat. 23 deg. 26 min. S. 20 day, 10 deg. 4 min. S. 25 day, 49 min. S. 30 day, 8 deg. 14 min. N.

Towards the end of the month, a fever of a very bad kind made its appearance, attended with delirium, low pulse, petechiæ, livid vibices, and hemorrhage from the nose, of which one died; and three or four more escaped with difficulty. It is proper to observe, that the symptoms denoting a tendency to putrefaction only ran high in those who had such an antipathy to the bark, that they could not be prevailed upon to continue the use of it; whereas those who took this medicine, and used it liberally, very soon got free of the fever. As the patients, when taken ill, were removed from the rest, and other means of prevention observed, the infection did not become general.

August, from the beginning to the 25th, was sultry, hazy, and wet, with strong north-westerly winds. On the 25th, we
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• anchored at Culpee, in the river of Bengal. From the 25th to the end of the month, the weather was very unsettled, with much thunder and lightning, accompanied with torrents of rain.

Rainy days, 8, 12, 13 . . ., thunder and lightning; 15 . . ., thunder and lightning; 16, 19, 21 . . ., thunder and lightning; 25, 26, 27, 28, 29, 30, 31 . . ., thunder and lightning.

August 10, lat. 5 deg. 48, min. N. 19 day, 21 deg. 18 min. N.

In the two first weeks of August, many of our people, officers, passengers, as well as the common seamen, were attacked with sickness, often a vomiting, but always a purging of gall, accompanied with fixed or flying pains in the bowels. For the first and second days, the stools were large and bilious; but in all it terminated in gripes and fruitless straining. In two or three, the disease made its appearance with all the symptoms of a bilious colic; and in one it began as a cholera. All these bilious complaints, whether we give them the names of diarrhoea, cholera, or dry belly-ach, when neglected, had an equal tendency to terminate in the dysentery: but
when

when proper remedies were applied at first, the diseases were easily removed. The particular treatment I shall refer to another place, only I must remark, that there is a very great analogy amongst all these diseases; and that those who suffered most by these complaints were more liable to remittent fevers and dysenteries in the following months.

I shall now proceed to give a general account of the weather and the diseases that occurred during the months we staid at Bengal, leaving the description of the country, as far as it seemed to influence these diseases, to another place.

The first two weeks of September were intolerably hot, sultry, and suffocating, with fogs and dews at nights. On the 16th and 17th, it blew fresh from the east. During the remainder of the month, the weather continued as intemperately hot as ever, with few or no intermediate breezes.

Rainy days, 4, 6 . . ; 8, 9, 21, 22 . . ; with thunder, lightning, and hard squalls.

The month of October was more insupportably sultry, and scarcely a breath of air was observable till the 28th; when
re-

refreshing breezes rendered the weather more cool and temperate for the remainder of the month.

Rainy days, 2, 6, 7, 8 ; 10 . . .

During these unhealthy months, fevers and fluxes of a very dangerous nature, were very prevalent at Culpee, and carried off numbers of seamen belonging to the ships lying there. At last they became so general, that, by the end of September, there were few or no hands on board of our ship capable of doing duty. They likewise raged at Calcutta, and were particularly fatal to those who had lately arrived.

The first weeks of November were calm and sultry in the middle of the day ; but the air was refreshed by pleasant breezes, frequently in the forenoon, and always in the afternoon. From the 16th to the end of the month, the weather was serene, pleasant, and temperate.

No rain ; wind northerly.

In the beginning of December, the weather was agreeable, and the winds westerly. On the 9th, the wind shifted to the south. From this till the 14th, it was remarkably close and calm in the day-time ; and there were thick fogs and heavy
dews

dews at nights. The rest of the month, the winds were northerly; and the weather delightful, as it usually is here at this season of the year.

No rain.

About the 10th of the month, several of the seamen were afflicted with diarrhœas, which I shall call colliquative, as they were accompanied with very copious thin stools, without pain, gripes, or tenesmus. In twenty-four hours, they reduced the patient to the greatest degree of weakness, and soon made the countenance look pale and ghastly. The principal remedies employed were very gentle emetics; magnesia and rhubarb; with opium, to restrain the profuse discharge; and chicken-broth and wine, to support the strength of the patient; and, in many cases, the bark, at first in cold infusion, and afterwards in substance, was indispensably necessary to strengthen the relaxed bowels.

January, 1769, was a pleasant, healthy, and temperate month. Our people suffered no inconvenience from the climate. Two or three were in the convalescent state of the flux; one laboured under the hepatitis, or disease of the liver; and two had other abdo-

abdominal obstructions, the consequence of frequent attacks of the diseases of the former months.

Rainy day, 1 : Winds for the most part northerly.

February was also serene, dry, and temperate, with agreeable breezes, except in the middle of the day, when the air was calm and sultry for a few hours. But, at this time, as also in the two preceding months, the climate is so healthy, that exposition to the sun and exercise, which before produce often instant sickness, were attended with no danger, as the sky was generally clouded; the marshy grounds dry; and the air free from noxious exhalations.

Rainy days, 5, 25, 26 . . ., with much thunder and lightning, and strong north-westerly winds.

The beginning of March was also temperate. About the 11th, the weather became close and sultry, and continued so till the 22d, unless when hard squalls happened, which were accompanied with thunder, lightning, and great falls of rain. As we were at sea during the remainder of the month, the weather, though warm, was very agreeable.

Rainy days, 11 . . . ; thunder and lightning; 12 . . ; 14, 19 . . . ; with much thunder and lightning.

We sailed for England the 22d of March. At this time almost all our people were able to do duty; however, several of them, who had suffered much in the sickly season, had not regained their usual strength and vigour. After the delightful months already described, this may, at first sight, seem extraordinary; but when it is considered on what poor diet seamen are obliged to live on at Bengal, their slow recovery from diseases will be easily accounted for. The animal food consists of lean beef, affording little nourishment; and pork, which makes a considerable part of their diet, is very bad. Greens and other fresh vegetables are neither to be procured in such plenty, nor at such a moderate rate, as to become articles of the ship's provision. The only vegetables which seamen are allowed in abundance are yams and rice.

During the two last months we remained at Bengal, about twenty of our people had the venereal disease, which they contracted

tracted at Gulpee. The infection, for the most part, made its appearance in the form of ulcers; warts and raspberry-like excrescences on the penis. Amongst the number infected, only two had a virulent gonorrhoea. The disease, though local, was only to be cured by mercury; however, several cases resisted its power, as a very inconsiderable quantity of the specific, whether exhibited internally, or applied externally, ran to the mouth, and was speedily carried off by salivation: so great was the relaxation occasioned by the heat of the climate, and so poor and dissolved was the state of the blood, long after the destructive diseases of the sickly season*.

The first week of April was calm and sultry. From that to the 23d, there were light winds, with frequent calms, and very hot weather. The remainder of the month was more temperate, with refreshing breezes.

Rainy day, 29 . . .

April 1, lat. 13 deg. 41 min. N. 10
day, 11 deg. N. 20 day, 7 deg. 47 min.
N. 30 day, 5 deg. 44 min. N.

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* See Chapter on the Venereal Disease.

In April, five of our people had remitting fevers. In one of the patients the disease was accompanied with symptoms of putrefaction, great prostration of strength, hemorrhage from the nose, and a delirium, with a low sunk pulse. Although bark and wine were given freely, yet his fever continued for about three weeks.

The month of May, though very warm and sultry, was healthy. In the first week, being under the equator, we were becalmed, but the heat of the sun was obstructed by a clouded sky; and the air refreshed by agreeable showers. During the rest of the month, as the trade-wind became steady, and we daily increased our distance from the sun, the weather was more temperate.

Rainy days, 1, 2, 3, 4, 5, 6; with lightning; 11, 12, 14, 18, 19, 22, 27, 29, 31.

May 28, 11 deg. 32 min. S. 30 day, 22 deg. 5 min. S.

June, from the beginning to the 7th, was temperate and cool, and the winds favourable. From this to the end of the month, for the most part, it blew fresh from

from the north-west, and the weather was cold, wet, and stormy.

June 18, lat. 30 deg. 20 min. S. 20 day, 32 deg. 4 min. S.

Rainy days, 1, 2, 7, 8, 9, 10, 11, 13, 15, 17, 20, 22, 27; with much lightning.

July was very cold and stormy. From the beginning to the 5th, it blew hard, with frequent squalls. From this till the 20th, the weather was very uncomfortable and stormy, one violent hard gale continually succeeding another. The high seas and contrary winds obliged us, for the most part, to lie to; and, as the ship became leaky, both from the water getting in betwixt her planks, and from the waves and large seas breaking over the decks, it was necessary to keep the pumps almost constantly at work. From the 20th to the end of the month, the weather was variable and unsettled.

Rainy days, 3, 4, 5, with hail, 9, 10, with thunder and lightning; 12, with hail, thunder and lightning; 13, 14, 15, thunder and lightning; 18, continual rain, hail, thunder and lightning; 19, thunder and lightning; 20, 21, 22, 24, 26, 27.

July 1, lat. 35 deg. 45 min. S. 6 day,
36 deg. 36 min. S. 10 day, 37 deg. 24
min. S. 20 day, 34 deg. 51 min. S. 30
day, 23 deg. 55 min. S.

In the beginning of June, two of our people began to be affected with the scurvy: the continuance of the cold moist weather, the nastiness of the decks, the corruption of the common diet, the biscuit as well as salted provisions, all contributed to make its progress very rapid. On the 18th of July, twenty of the seamen were rendered incapable of all duty, and some of them reduced to the last dreadful stage of this distemper. And many of those also who still kept the deck, were more or less affected with it. Although the officers, who lived better, and lay in drier apartments, were not totally exempted from the disease; yet the symptoms ran to no great height in any of them, except in one who was greatly weakened by an antecedent fever.

The unfavourable weather still continuing, on the 19th of July, it was unanimously agreed to bear away for Madagascar, as being the nearest and best port for refreshment, and the only means of pre-

preserving the lives of our seamen; and of course the ship and cargo, which now seemed to be in imminent danger. We arrived there on the 1st of August, and anchored in St. Augustine Bay.

During our run to that place, the scurvy increased daily; the symptoms grew worse; and greater numbers were affected. Of the ship's company, which, at our leaving Bengal, consisted of no more than eighty-seven, officers and boys included, thirty-three of the best hands were confined below, many of them in the last stage of the disease; and those who still continued upon deck were so much enfeebled, that the duty of the ship required the assistance of the passengers and their servants.

We lay at Madagascar all the month of August, during which time the weather was settled, the air dry, and the heat of the sun pretty intense in the day-time; but at nights it was chilly and cold, owing to fresh sea-breezes blowing from the afternoon till midnight.

As soon as we arrived at this plentiful island, the sick were supplied with oranges in abundance, and vegetable soups, thickened with greens and pumpkins. It was,

however, judged prudent, that the weakest of them should be kept on board for a few days before they were sent to the sick tent. By this precaution, and the free use of wine allowed by our commander through the course of the disease, we had the good fortune to lose none of our people. By the 20th of the month, they were all capable of duty except four; three of whom had still monstrous swelled legs and contracted ham-strings; the countenance of the other patient was bloated, and he was subject to profuse hemorrhages from the nose.

On the 7th of September, we sailed from St. Augustine's Bay. As we approached the high latitudes off the Cape of Good Hope, the weather was again cold, wet and uncomfortable.

Rainy days, 5 . . . ; 15, 16, 17, 21, 22, 23 . . . ; 25, 28, 30 . . . ; with lightning.

September 18, lat. 24 deg. S. 20 day, 33 deg. 56 min. S. 30 day, 35 deg. 36 min. S.

The first week of October was cool, dry, and temperate. From this to the end of the month, the weather was warm and

and serene, the heat of the sun being tempered by refreshing breezes.

Rainy day, 11:10 to 3:10, and 5:10 to 7:10.

October 10, lat. 24 deg. 4 min. S. 30 day, 14 deg. 31 min. S.

On the 17th of this month, we anchored at the island of St. Helena, and set out to sea again on the 29th.

This island, which, at a little distance, exhibits the appearance of a stupendous rock, is situated in the middle of an immense ocean, and in a tract where the south-east trade-wind seldom intermits. The climate is therefore serene, temperate, and pleasant; and, through the whole year, is neither subject to the extremes of heat nor cold. This island appears very barren at first sight; but, upon entering into the country, the eye is transported with scenes and landscapes, romantic beyond description; consisting of good pastures, verdant vales, and high irregular precipices. The soil in the vallies is rich and deep, and would produce all kinds of grain, roots, and greens, were it not for an amazing number of rats and mice, which devour the seed as soon as thrown into the ground. A species of yam grows here in great plenty, which

which is sliced and boiled for a long time, and afterwards toasted; before it is thus prepared, the juice of this root is said to be of a poisonous nature: but, after it is dressed, not only the slaves, but even the best families, eat it as bread, to which they prefer it, although they have flour and corn sent annually from England in the storeships.

The families generally reside in the country; but, as soon as a ship arrives, they repair to St James's valley, where most of them take in lodgers, who meet with excellent refreshments; and are regaled with abundance of animal and vegetable food, and some fruits, the produce of their farms. If one might judge from the variety of roots, such as carrots, turnips, potatoes, and greens, which are served up daily at their entertainments, he would naturally conclude, that, with a little pains, a sufficient quantity of this salutary part of diet might be raised, not only to supply the soldiers who reside here, but even a whole scorbutic fleet.

Although the gentlemen, who can afford to live on shore, meet with such proper refreshments, after a long sea-voyage, yet
this

this is not the case of the common sailors; for, unless half rotten with the scurvy, and sent ashore upon sick quarters, no other vegetable can be procured for them, but at an exorbitant charge, except purslin, which is gathered by the boys from the rocks, and of which they have a scanty allowance in their soup. The want of proper refreshments at this island may be considered as the only cause why seamen are so often afflicted with the scurvy in the short passage to England; nor can any other reason be assigned why the soldiers, who reside on this salutary island, are subject to the same disease.

This scarcity of vegetables, in my opinion, might easily be remedied, by setting apart a sufficient quantity of the company's land, for the cultivation of fruit, greens, and roots: for certainly, with the same care and industry, these lands would produce as good pot-herbs, turnips, carrots, potatoes, and pumpkins, as any of the farms of the planters; who only raise a sufficient quantity for themselves and guests.

If such a humane scheme as this were adopted, St. Helena would be inferior to
no

no place in the world for refreshments. Vegetables would be produced in abundance, not only to supply the garrison; but would be procured at a rate sufficiently moderate to become an article of every ship's allowance while at this island.

During the first week of November, the weather was pleasant, and the south-east trade steady. From the 18th till the 20th, being near the equator, the weather was sultry and rainy; and the winds variable, with frequent calms. Till the end of the month, there was a fresh north-east trade, with agreeable temperate weather.

Rainy days, 12, 13, 15, 16, 17, 18, 19, 20, 29.

November 1, lat. 11 deg. 50 min. S. 10 day, 2 deg. 25 min. N. 20 day, 8 deg. 46 min. N. 30 day, 21 deg. 27 min. N.

This month several of our people were attacked with fevers, which only seemed to be symptomatic from bile, as the disease soon disappeared by cleansing the bowels. In two cases, however, the disease was accompanied with symptoms of putrefaction, and the fever run out to the 12th or 13th day.

During

During the first ten days of December, the weather was delightful and temperate, and continued so till near the 20th, with some intermediate days of calm. From this to the end of the month, it was cloudy, hazy, and cold.

Towards the end of the month, three of our people were confined below by the scurvy, attended with the usual symptoms; and many of those, who were cured at Madagascar, seemed to have a tendency to relapse.

Rainy, 2, 8; 11, 14, 17; 18, 19; 21, 22, 23; 27, 29.

December 10, lat. 26 deg. 46 min. N.
20 day, 36 deg. 31 min. N. 31 day, 49 deg. N.

January, 1770, was a cold disagreeable month; the winds were north-easterly, accompanied with snow and fleet. On the 21st, the wind shifted to the westward, and the weather became more temperate.

On the 5th, at night, we made Scilly, but, by contrary winds, were detained in the Channel. On the 16th, we arrived in the Downs, which put an end to our tedious and disagreeable voyage.

The

The diseases of our seamen this month were coughs and colds; four had ulcerated fore throats; some were afflicted with the rheumatism; and two had swelled testicles, independent of any venereal taint.

The treatment of these cases did not differ from the common practice: only it is to be remarked, that it was unnecessary to make copious evacuations; and, even when blood was drawn for a peripneumonic symptom, a few ounces, though it gave relief, greatly enfeebled the patient.

I shall conclude this chapter with observing, that of the number of people, who went out in the Talbot, thirteen died: viz. two of the recruits in the outward passage; five of the ship's company at Culpee; three at the hospital in Calcutta; and three in the homeward passage; of whose cases a more particular account will be given afterwards*.

C H A P.

* See Part II. Chap. IV.

C H A P. II.

A GENERAL ACCOUNT OF THE WEATHER AND DISEASES IN A VOYAGE TO MADRASS AND CHINA, IN 1771, AND IN RETURNING TO ENGLAND IN 1772.

THE Talbot failed from the Downs on the 16th of February 1771. The ship's company consisted of one hundred and seven men. There were also on board sixteen passengers, and seventy military recruits for the establishment at Madrafs.

In the first week of February the temperature of the air, was moderate for the season. From the 8th to the 11th it was intensely cold; and much snow fell. To the end of the month, the weather * was cold, and unsettled.

The diseases of this month consisted of colds, which, in some cases, continued obstinate, till such time as we got into warm weather. A few of the seamen and soldiers had inflammatory fore throats; and four were seized with a continued fever

* For the course of the winds; the rainy days; the exact heat of the air; and the latitudes; the reader is referred to the next chapter, containing, a meteorological register kept during the voyage.

fever of a low kind, which yielded to the liberal use of the peruvian bark.

Many of the seamen and soldiers also had the venereal disease; but as some hints, respecting its treatment, in hot climates, will be offered in the second part of this work, I shall take no farther notice of this distemper, in this short historical sketch.

In the beginning of March, the weather was still cold, and variable. From the 11th to the 15th, light airs, or calms prevailed. On the 15th we got into the north-east trade-wind: and from this time till the 27th, the air was agreeably warm and dry; and the sky clouded. To the end of the month, being near the equator, the weather was moist, and extremely sultry.

On the second of this month, a black boy, a native of India, died of a consumption. When we sailed, he was reduced to that stage of the disease, from which none recover.

On the 14th of this month, one seaman, and on the 16th another, was seized with the remittent fever. They were both placed in airy situations; and, after evacuating

cuating the bowels, they speedily recovered by the use of the bark.

On the 29th of the month, the chief mate, after being exposed to the rays of the sun, was seized with the remittent fever; and was also successfully treated in the same manner.

One of the midshipmen was taken ill of the dysentery, and one seaman was attacked with the bilious cholic: they were treated agreeably to the plan to be afterwards mentioned in these diseases, and recovered.

Several of the crew, about the end of this month, complained of head-ach, faintness, and oppression at stomach; sometimes without any symptom of fever; and sometimes with considerable quickness of pulse. When there was no great heat, a dose of salts, or of crystals of tartar was sufficient to carry off the complaint. But when the person was feverish, emetic tartar, managed so as to occasion some degree of puking, and afterwards to evacuate the intestines, seldom failed to remove every symptom.

Both in this, and in the former voyage, as we approached the equator, most of our

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people

people complained of a cutaneous eruption, called the *prickly heat*. It consists of numerous pimples, or red spots, breaking out in various parts of the body, occasioning an intolerable itching. Interspersed with this eruption, especially upon the hands, small eminences, white tubercles, or weals, frequently appear, resembling the sting of nettles, which greatly add to the itching, and are increased by scratching.

The *prickly heat* is not accompanied with any febrile commotion; and is accounted salutary. When severe, it is mitigated by a cool, and spare diet, and gentle laxatives. But whilst it continues out, no inconvenience arises except the itching; and, after a few weeks, it either disappears, or ceases to give much trouble. The retrocession of this rash is always attended with head-ach, lassitude, and often a feverish state. Therefore sudden exposition to a current of air, when sweating, and the imprudent use of the cold bath, ought to be avoided.

April, from the beginning to the 4th, was close and sultry, with dews at night. From this to the 23d, we had an agreeable south-east trade-wind, though the weather

ther still continued very hot and dry. To the end of the month light airs, with some intermediate days of calm. On the 29th, at eleven o'clock at night, the moon was eclipsed for two hours; during which, the air felt remarkably chilly; although the thermometer did not sink under 72° .

Eight of our people this month laboured under the remittent fever: In three it was slight; but, in the remaining five, so severe as to require the liberal use of the bark.

Having perused the *Thesis* of the ingenious Dr. James Lind on the remittent fever of Bengal, which gives an account of the sudden, and violent effects of an eclipse of the moon *, on eight convalescents at Calcutta, I narrowly watched its influence on these five patients, three of whom were still in a weak state. But it had no appa-

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rent

* Subitos ac violentos lunae effectus tum praecipue observavimus 4to. nonas Novembris, hora circiter secunda matutina; quo tempore, terra interposita, radios solares interceptit: in eo temporis articulo haud pauciores octo nautarum ex nave *Drake*, qui, ad Calcuttam in aedibus praefecti navis, ex febribus convalescebant; eodem fere temporis puncto vehementissimo paroxysmo sunt correpti: et idem plurimis evenit, qui in nave fuere collegae nostri curae demandati.

Dissertatio Medica de febre remittente, &c.

rent effect on any of them. One, indeed, relapsed on the first of May; but he had been employed, at hard labour, in the gun-room, on the morning of the day, on which his fever recurred.

Three other patients were this month on the sick list: one had the dysentery; one gravel; and one hemorrhage of the nose.

The month of May to the 20th was temperate. From this to the 26th the air felt colder and more chill than the thermometer denoted. To the end of the month the weather was unsettled, squally, and rainy.

One of our people had a slight remittent which yielded to an emetic; and two laxatives: But other two had low fevers, with remissions, which required the bark, wine, and the moderate use of opium. Although we were off the Cape of Good Hope, none of the crew had the least appearance of scurvy.

June, from the beginning to the 5th, was squally, and rainy with some thunder and lightning. From this to the 17th the weather was exceedingly pleasant. To the end of the month the air was extremely
sultry,

fultry, especially at Johanna, as will appear, in the meteorological register.

In the beginning of this month, eight people had the remittent fever; which, in three cases, was so fevere as to require the liberal use of the bark.

On the 19th of June we anchored at Johanna, the chief of the Comera islands; and sailed from it on the 22d, all in perfect health.

This island, which, at a little distance, affords the most delightful landscape, is situated almost at an equal distance from the north-east end of Madagascar, and the eastern coast of Africa. The land appears remarkably elevated; in many places towering up into high peaks. The level ground, near the place where we anchored, is of inconsiderable extent; and thickly covered with cocoa trees and shrubs. Some of our officers, and passengers, who went up into the country, complained much of the intense heat they experienced in ascending the mountains, and of a transition to chilness as they approached the summits.

The harbour being very accessible; and the business of taking in wood and water expeditious; most of the outward bound

ships touch at this island. The refreshments are also good; and are to be procured at a moderate rate. The bullocks, and fowls, though small, are good. The oranges are excellent. There are also some pine apple: limes, guavas, pumpkins, and plantains, are to be procured in abundance.

The air of this island does not appear to be very salutary: for, during our stay, the high mountains were covered with a thick fog. But as we were there during the dry season, and as those who staid ashore on the duty of cutting wood, either slept in suspended cots, or had temporary beds, considerably raised from the ground, none suffered from the effects of nocturnal exhalations. We had, indeed, some cases of fevers on board on the following month; but as they were mild, in every instance, except two, I can ascribe their origin to no other cause, than what frequently produces them on the ocean.

But in order to guard the unwary voyager, against the destructive influence of sleeping ashore, on the Comera Islands, I shall introduce the melancholy catastrophe which

which happened to the Ponsborne, and Nottingham, East Indiamen *.

The Ponsborne, on the 25th of August 1765, anchored to the leeward of the Island of Mohilla, which is at no great distance from Johanna. The sick were immediately sent ashore, consisting of about fifty, ill of the scurvy, who recovered in a few days. The ship sailed on the second of September; but was becalmed to the 5th: upon which day, above forty of the crew were attacked with the remittent fever; chiefly consisting of those who had been ashore for the cure of the scurvy. The Carpenter's, Cooper's, and Boat's crew, who, from their employment, had slept ashore, during the stay of the ship, were also seized with this fever, most of whom died: and, in a few weeks, above seventy people were carried off by this pestilential distemper.

The Nottingham Indiaman, anchored to the leeward of Johanna, 16th of July 1766. Forty of the sick, chiefly ill of the scurvy, were sent on shore. The Carpenters, Coopers, and several others, likewise slept

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* See Medical Observations and Inquiries, Vol. IV. 1772.

on shore. On the 21st of July the ship sailed, but was becalmed in sight of the island. From the beginning of August to the 10th, most of those, who slept on shore, were attacked with a remittent fever of a bad sort. Of nine people who slept in a tent, chiefly officers, seven were seized with the fever, of whom two died. The other two escaped: the one by sleeping in a sea cot, well protected from the air; and the other by being almost constantly intoxicated *.

The month of July, for the first week was remarkably close and moist. To the 25th the air was very sultry, sometimes with light winds, and sometimes with calms. On the 25th we anchored in Madras roads. From this to the end of the month, the heat was intense; and would indeed have been insupportable, had

* The air of Johanna proved equally fatal to the military regiments intended for the reduction of the Cape of Good Hope in 1781; but who afterwards, in their voyage to India, touched at this island. By encamping, and sleeping ashore, the remittent fever was caught, and afterwards spread by contagion; and many lives were lost. Six officers of 100th regiment died, and the 98th and other regiments, particularly the 2d battalion of the 42d suffered equally, if not more, in proportion. See *Remarks on the causes which produce diseases, amongst new raised troops in long voyages.*

had not the sea and land breezes regularly succeeded each other.

Six on board were afflicted in the beginning of this month, with the remittent fever; which only, in one of the passengers, was attended with dangerous symptoms.

From the beginning to the 12th of August, the weather was extremely sultry, with thunder and lightning and some rain. From this to the 23d, the same hot weather continued, with frequent squalls of sand and dust from the shore, often succeeded by heavy showers of rain. But the sea breeze blew regularly in the afternoon; and continued till ten at night, which made the air comparatively cool and agreeable. On the 23d we sailed from Madras; and notwithstanding the thermometer ranged high, during the remainder of the month, having a brisk favourable wind, and a fine grey sky, the air felt temperate and invigorating.

Upon our arrival at Madras, the ship's company were employed at hard work, in unloading the vessel, not only in the morning, but during the hottest part of the day. On the second day after our arrival, ten of our people were seized with bilious complaints; which, in a fortnight, went

went through above one third of the crew; and raged as generally amongst the other ships lying at anchor in the roads.

These complaints were ushered in with sickness, vomiting, and often a purging of bile. In some the evacuations were large and copious, without gripes: others were tormented with excruciating pains in the bowels, accompanied with fruitless straining and tenesmus. Some were seized with every symptom of the dry belly-ach; and others had a true cholera morbus.

In all these ways, this assemblage of bilious complaints began; and some who exposed themselves, when hot, to the dry land winds, along with the symptoms already enumerated, were afflicted with general soreness, weariness, and severe spasmodic affections of the muscles. The treatment of these complaints shall be reserved to the second part of this work.

Whilst we staid at Madrafs, one of the seamen was seized with apoplexy from a *coup de soleil*, of which he died. As strokes of the sun,* especially when persons

* In the Carnatic, apoplexies from this cause, Mr Dick, who attended a regiment of Artillery for two years, observes, proved

sons are fatigued, or intoxicated, are frequent causes of death in hot climates, I shall here introduce his case; and afterwards some remarks on the probable means of averting the danger in similar attacks.

EDWARD HILLIAR, a young man of a strong, active, and healthy constitution, was allowed to go on shore on pleasure, and to remain at Madraſs on the 17th and 18th days of August, when the thermometer was at 94° and 93° at mid-day, at sea where the ship anchored; and consequently would have stood some degrees higher ashore. On the forenoon of the 19th,

proved more fatal in the last war, than the cholera morbus, dysentery, and inflammation of the liver. The men were generally seized, when fatigued by marching in the heat of the sun. "They complain first of great head-ach, thirst, and sometimes difficult breathing: in a few minutes, a vertigo and bilious vomiting come on. They drop down breathless, turn comatose; and, unless immediate assistance be given, the face swells, and turns almost black; the pulse which was at first full and quick sinks; and after some hard struggles for breath they expire."

"Removing them under the shade of a tree, bleeding them freely in time, and giving them some water, generally cure them, but as the stomach and bowels are often loaded with bilious matter, it is necessary in the evening to give them small doses of tartar emetic, in a saline mixture, which answers better than any other evacuant." Medical Commentaries for 1785. Vol. X.

19th, he assisted in putting a bale of cotton on board a boat; and, as soon as the boat was put off, he lay down without making any complaint, except having a motion to puke. His companions imagining him to be asleep, took no notice of him till the boat came along side of the ship; when one of his messmates endeavoured to rouse him, but in vain.

My assistant was called to visit him, but half an hour having elapsed from his laying down in the boat, no motion was to be felt in the thorax, nor any pulsation in the arteries. His countenance was of a deep purple colour; his face and neck swollen; and the jugulars very turgid. His jaws were locked; his eyes dead, and staring; and his fists strongly clenched. The heat of his body was much above the standard of health, and communicated a burning pungency to the touch. He was bled largely both from the arm and jugular: the blood was very hot, and it was with difficulty stopped. Various other means were tried; but nothing was done to diminish animal heat.

Two hours had elapsed before I came on board: the joints still remained flexible; but

but the glassy appearance of the eyes, and the inflation of the bowels, evinced that life had totally deserted the body.

This unfortunate case made a strong impression on my mind: for although some vessel of the brain might have been ruptured, so as to have rendered every effort unavailing; yet, in such casualties, besides bleeding, I should place the greatest dependence, upon the instantaneous application of such means as would reduce the animal heat, at least to the standard of health; and are calculated to take off the rarefaction of the blood in the vessels. With this view, therefore, the body should be shaded from the rays of the sun; the air made cool by fanning it near the unfortunate object; and water, rendered artificially cold, should be freely applied to the head, face, and neck; nay even to the whole body; and also injected into the intestines: and when, by these means, the body is sufficiently cooled, an attempt should be made to restore respiration by inflating the lungs.

From the 1st to the 5th of September, the weather was thick, hazy, calm, and excessively hot. The nights were damp, and

and the air below so disagreeable, that the people often slept upon deck. To the 10th the weather was generally calm, and rain poured down in torrents, with much thunder and lightning. On the 20th and 24th we had a pleasant gale; but the rest of the month was moist, and disagreeably hot, with much rain, thunder, and lightning.

Several circumstances contributed to make this a very unhealthy month: the ship being much lumbered when we sailed from Madras, the seamen were kept in constant duty, in stowing goods: and there was no opportunity of airing the hammocks, or keeping the decks clean. We were likewise exposed to noxious exhalations from the shores of Sumatra; and other Islands in the Straits of Malacca.

By the middle of the month, twenty-four patients were on the sick list, afflicted with the remittent fever, and dysentery; attended with great prostration of strength: and many of the seamen, who still continued to do duty, like plants in an unhealthy soil, drooped, looked pale, wan, and sickly.

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On the 20th of September, the ports were laid open; the chests and hammocks carried upon deck; and the ship underwent a thorough purification. By these means, and getting out of the reach of the exhalations from Sumatra, a check was given to the fever and dysentery; but we had the misfortune of losing the Carpenter's mate*, who relapsed into the remittent fever, and died on the 23d of this month.

October, from the beginning to the 10th, was close, sultry, and hazy, with some rain. To the 25th the weather was pleasant, and dry, the heat of the air being tempered by a clouded sky, and fresh breezes. From this to the end of the month it was sultry in the day; but cold and chill at night.

On the 19th of October we got up the Tigris as far as Macao, and on the 25th anchored at Wampoa; where our people all arrived in tolerable health; and being supplied with nourishing diet, even the weakest recovered in a few days.

* See Robert English's case, among the collection of remittent fevers.

I shall now proceed to give a short detail of the state of the air, and diseases, which occurred at Wampoa, leaving the description of the country, soil, and situation to another place*.

In the month of November, the weather was still sultry in the middle of the day. But the nights and mornings were cold, moist, and chilly, owing to the northerly or easterly winds blowing over the swampy rice grounds.

From the beginning of December to the 20th, the weather was very agreeable and temperate in the day; but frequently exceedingly chill at nights. From the 20th to the 23d, the atmosphere was gloomy and cold. To the end of the month, the winds were northerly; the air cool in the day time; but at nights very chill and moist.

The constitution of the air, in the two last months, was very productive of diseases. Above one third of our people were attacked with remittent and intermittent fevers, and the dysentery. The fever and flux were frequently combined; and often changed into one another. The flux, however, was the prevailing disease, and,

* See Part I. Chap. IV. Sect. III.

and in most cases, soon after the invasion, when treated properly, the febrile symptoms disappeared.

In the first five days of January 1772, the wind being southerly, the air was agreeable, dry, and temperate. To the end of the month, the winds were N. E. and the weather very cold and chilly.

This month our people were in general healthy; and those who had the flux were recovering. This disease, however, was still prevalent amongst the crews of other ships lying at Wampoa.

The first week of February the weather was cold. From the 7th to the 13th, the winds were generally southerly, and the air temperate. To the 19th, the winds were northerly, and the weather cold. From this to the end of the month, the air was agreeably temperate.

Towards the end of last month, and beginning of this, colds, with slight pleurifies, were the prevailing complaints, which required once bleeding. One of our people died of the locked jaw, whose case will afterwards appear in the chapter on *Tetanus*.

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March

March from the 1st to 5th was warm and sultry in the day. On the 5th and 6th the winds were northerly, and the atmosphere cold and gloomy. On the 7th we sailed for England; and had agreeable temperate weather to the 15th. From this to the end of the month, especially when we crossed the equator, and arrived at the straits of Banca, the air became excessively sultry.

From the beginning of April to the 8th, the air was hot and sultry. To the end of the month, as we daily encreased our southern latitude, the weather was generally pleasant and temperate; although the thermometer ranged high.

On the first of April we anchored at North Island, which is situated near the beginning of the straits of Sunda, in lat. 4. 38. S.

On the 4th we were off Java: and on the 30th of the month, we were in lat. 25. 13. S.

During the last month some of our people had slight fluxes. Two were indisposed this month with mild remittent fevers; and one was seized with the locked jaw,

jaw, whose case though violent and tedious terminated favourably*.

During the first week of May the weather was very temperate, the air being cooled by fresh breezes. From this to the 12th we had unsettled weather; with rain, and some thunder and lightning. On the 14th it rained much. From this to the end of the month, being in high latitudes, and having brisk winds, and fair weather, the air was agreeable, cool, and temperate.

Some of our people had slight colds; two complained of the rheumatism; and two had fevers of a low kind, with obscure remissions, which yielded to the bark.

For the first four days of June, the weather was dry, though rather cold. To the 10th the air was agreeable in the day time; but at night heavy dews fell. To the end of the month, we had a favourable south-east trade-wind and very pleasant weather.

Three had remittent fevers this month, and several complained of colds, and aching pains, the consequence of obstructed perspiration.

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* See Chap. on the Tetanus.

On the 4th of June we rounded the Cape of Good Hope, without any of our people having the least symptom of scurvy. On the 19th we anchored at St Helena, and remained there to the 28th. The ship's company were supplied with soup, and fresh beef; but had no vegetables, except a little purslain.

I regretted much that we passed the Cape of Good Hope, without touching at it. Several of our officers, who had been there, represented it as the most delightful settlement to be met with in an India voyage. The country, they allowed, at a very little distance from the town, to be mountainous and barren. But the air healthy and temperate; and, from the industry of the Dutch, the lands, near the town, are highly cultivated, and interspersed with orchards and vineyards. Here are to be procured, in abundance, all European and Tropical fruits. The beef, mutton, and poultry are good. It may, therefore, be ranked amongst the best places for refreshment. But it unfortunately happens that ships can only put in here at particular seasons of the year; and

and therefore when reduced by the scurvy, the stormy weather, and high seas, render it inaccessible.

From the beginning of July to the 13th, the weather was warm and pleasant, and the south-east trade-wind favourable.

From the 14th to the 25th, the weather was close, moist, and rainy. From this to the end of the month, although the thermometer was never under 79° , and often at 82° ; and although we were daily approaching nearer the sun, yet the atmosphere was remarkably temperate; having a constant brisk north-east trade-wind, and a clouded sky.

In the first week of August, the weather was warm and often sultry. From this to the 20th the air was cool and temperate. To the end of the month, the weather was constantly rainy, thick, or hazy, and very cold at night; with heavy seas almost constantly breaking over the ship's deck.

About the end of last month, two seamen began to shew a tendency to scurvy. By the 20th of this month many began to be slightly affected; and eight were rendered unfit for duty by the distemper.

Four were confined with the rheumatism; two were ill of the dysentery; and one of cholic and constipation.

The two scorbutic patients who were first affected, had been long at sea; had suffered frequently by the disease; and were shipped at Gravesend, immediately after their arrival from a long voyage from the West Indies. But, it must be remarked, that neither these two patients, nor any of the others who became scorbutic, had provided their usual stores of tea and sugar at China; but had lived constantly on the ship's provision.

On the 1st of September we arrived in the Downs. During this voyage, in the outward passage, we only lost one person, viz. the native of India, of a consumption: and from the time we arrived at Madras, till we anchored in the Downs, there were carried off by disease, three of the ship's company*; one by apoplexy, one by fever, and another by the locked jaw.

CHAP.

* A soldier, long in the service of the company, was taken on board at Madras. He was pale, fallow, and emaciated. Without making any previous complaint, he was found dead in his hammock at Mica.

C H A P. III.

METEOROLOGICAL OBSERVATIONS MADE IN A VOYAGE TO MADRASS AND CHINA, IN 1771; AND IN RETURNING TO ENGLAND, IN THE YEAR 1772.

IN the following register the heat of the air was ascertained by Fahrenheit's thermometer. The mercury was contained in a cylinder, and not as usual in a globe, or ball. The instrument was fixed on the inside of the round-house window, unless when the weather obliged it to be shut; and then it was removed into the balcony. The former situation was preferred, in order to guard against the direct rays of the sun. But when both situations were equally shaded, no material difference was observed.

The thermometer was never carried out of the ship; and, therefore, at the different ports in India, it only shews the heat of air upon the sea, or on the water, at some considerable distance from land. In estimating the heat on shore, therefore, the

mercury ought to be supposed to vibrate higher. On account of the sandy soil at Madrafs, it was found moderate enough to allow a thermometer to rise six or seven degrees higher ashore, than one, equally graduated, kept on board of ship.

It may be also proper to remark that although the thermometer always shews the exact heat of the air; yet the heat denoted by it does not correspond with the sensations of the body. For example when the air is calm and moist, betwixt the tropics; even although the mercury in the thermometer may have fallen a few degrees, the constitution experiences a more stifling heat than when it ranged higher, provided the air was clear, dry, and ventilated. In the hottest weather, indeed, which I have experienced in India, when the mercury in the thermometer has stood at 90° ; if there happened to be an agreeable breeze, the mind has felt chearful, and the constitution alert: whereas an inexpressible degree of langour, and depression has been felt when the air has been calm and moist, although the mercury did not rise to 80° . The same remark holds good in the contrary sensation

fation of cold. Thus in the latitudes off the Cape of Good Hope, in wet and stormy weather, when the mercury in the thermometer is below 60° , the constitution experiences a greater sensation of cold than it did in England, when the mercury in the thermometer stood about 40 degrees.

The following tables will be easily understood in general, by the marks at the top of each column. Some circumstances, however, require explanation. In the column marked thermometer, when $\odot$ occurs, it denotes that the thermometer rose to such a degree, by the instrument having been exposed to the direct rays of the sun. This experiment was seldom made, owing to the misfortune of having broke a small pocket thermometer; and the inconvenience and danger of removing the large one.

The force of the winds is denoted by cyphers; 0 calms; 1 light winds; 2 pleasant gales; 3 fresh gales; 4 storms. Rain is denoted by dots; a light shower; greater showers; heavy rain; and very heavy rain, in proportion to the number of dots. Thunder and lightning are specified by their initial letters.

M E T E-

of cold. Thus in the barometer
 off the Cape of Good Hope, in wet and
 stormy weather, when the mercury in the
 thermometer is below 60°, the contraction of cold
 experiences a greater tension of cold
 than it did in England, when the mercury
 in the thermometer stood about 40 degrees.
 The following table will be easily un-
 derstood in general, by the marks at the
 top of each column. Some circumstances
 however, require explanation. In the
 column marked thermometer, when 0 is
 cast, it denotes that the thermometer has
 reached a degree, by the instrument having
 been exposed to the direct rays of the sun.
 This experiment was seldom made, owing
 to the risk of having broken a small
 pocket thermometer; and the inten-
 sity and danger of removing the
 instrument from the sun was not
 to be despised. The force of the winds is denoted by
 symbols; 0 calm; 1 light winds; 2
 moderate gales; 3 fresh gales; 4 strong
 gales denoted by dots; a light shower;
 greater showers; heavy rain; and very
 heavy rain, in proportion to the number
 of dots. Thunder and lightning are
 denoted by their initial letters.

M.T.R.

METEOROLOGICAL REGISTER.

February 1771.

Day.	Hour.	Therm.	Lat.	Winds.	Weather.
			N.		
21	11 a. m.	57	47 36	S W 3	Foggy
22	11 a. m.	58	47 26	4	Thick Fog
23	11 a. m.	59		2	Clear Sunshine
24	11 a. m.	68		2	Sunshine
25	11 a. m.	58	45 55	W 4	Sunshine
26	11 a. m.	58		S W 3	Hazy
27	11 a. m.	61	44 55	W 2	Fair
28	11 a. m.	59	44 28	S W 3	Sunshine

March, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			N.	W.		
1	11	58				
	3	59	43 44	11 35	W b S 2	Sunshine
2	11	59	42 26	11 52	W N W 1	Cloudy .
	4	60				
3	11	60 $\frac{1}{2}$	40 46	12 20	N W 2	Clear
	4	63				
4	11	60	39 11	12 34	W b N 2	Clear
	4	63				
5	9	62	38 24	12 37	W b N 2	Cloudy .
	4	62 $\frac{1}{2}$				
6	9	62	37 8	12 9	NWbN 2	Cloudy
	4	62				
7	9	59	35 36	13 54	N 2	Cloudy . . T L
	4	61				
8	9	62	34 40	15 38	N 3	Cloudy . . .
	4	64				
9	9	64		15 2	W S W 2	Cloudy
	4	64				
10	9	64	32 9	14 27	S W 2	Sunshine
	12	72 $\odot$				
11	9	66	32 27	14 58	S 0	Sunshine
	12	81				
12	7	67	31 57	15 32	Variable 0	Sunshine
	4	70				
13	9	66	31 31	15 47	0	Cloudy
	4	67				
14	11	66	30 27	16 15	N N W 2	Cloudy
	5	65				
15	10	66	29 8	18 1	N E 2	Cloudy
	4	66				
16	9	66	27 43		N E 2	Cloudy
	4	66				
17	11	66	25 50	17 30	N E 2	Hazy
	4	70				
18	11	68	23 24	18 2	N E 2	Cloudy, L.
	4	70				

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March, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	W.		
19	9	69	28 41	17 42	NE 2	Cloudy
	12	95 [⊙]				
20	10	71	17 42	18 8	NE 2	Hazy
	4	72				
21	9	72	15 31	18 8	NE 2	Clear
	4	74				
22	9	74	13 20	18 8	NE 2	Hazy
	4	75				
23	9	75	10 37	18 8	NE 2	Sunshine
	4	75				
24	9	77	10 37	18 8	N 1	Fair
	4	78				
25	10	79	9 34	18 8	N 1	Sunshine
	4	80				
26	11	81	6 34	18 11	NW 2	Hazy
	4	82				
27	11	82	5 24	18 12	N 1	Hazy
28	11	82		18 5	N 1	Fair
	4	84				
29	4	85	4 44	17 49	NbE 1	Hazy, at night TL...
30	4	82	4 21	17 45	NE	Hazy.
31	4	83		17 24	0	...

April, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			N.	W.		
1	8	82	1 56	17 26	Variable 0	Cloudy, at night . . .
	4	82				
2	11	84	1 19	17 26	Variable 1	Cloudy
3	11	83	42	17 53	Variable 0	Cloudy . .
4	11	80	30	18 4	Variable 1	Hazy
	4	81	S.			
5	11	82				
	5	83	7	18 54	S E 2	Hazy
6	11	81	1 19	19 40	S E 1	Fair
	12	92				
7	11	81	2 41	20 13	S E 2	Cloudy
	4	82				
8	11	82	3 47	20 45	S E 1	Cloudy
	4	83				
9	11	82	4 33	20 51	S E 1	Cloudy
	4	84				
10		84	6 3	21 9	S E 2	Hazy . . .
11		83	8 27	21 45	S E 2	Cloudy
12	11	82	9 45	21 49	S E 2	Hazy
	4	82				
13	11	81	11 1	22 17	S E 2	Clear
	4	81				
14	11	81	12 19	22 47	S E 2	Hazy .
	4	82				
15	11	81	13 33	23 17	S E 2	Fair
	4	82				
16	11	80	14 7	23 37	S E 2	Fair
	4	80				
17	8	79	14 15	23 55	S E 2	Cloudy .
	3	80				
18	8	80	14 28	24 13	S E 2	Cloudy
	3					
19	8	80	15 32	25 3	S E 2	Cloudy
20	8	80	17 12	25 47	S E 2	Cloudy
	3	81				
21	8	80	18 48	25 29	Variable	Cloudy

April, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			S.	W.		
22	8	80				
	3	81	20 3	25 14	S E 2	Cloudy
23	8	79				
	3	79			S E 2	Hazy
24	8	78	22 21		Variable 0	Cloudy
25	8	78	22 11	29 19	Variable 1	Rainy
26	8	78	23 16	29 6	E 1	Fair
27	8	78			Variable	
	3	76	24 38	28 28	E 2	Cloudy
28	8	78	25 28	27 23	E 2	Fair
29	8	77	26 9	26 43	E 1	Cloudy, ecl. of the moon
30	8	75	26 46	25 59	Variable 1	Fair
	3	76				

May, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
1	8	72	S.	W.		
	3	73	27 59	24 38	Variable 2	Squally
2	8	69	28 45	23 22	E 4	
	3	69				
3	8	66		21 55	NNW	Continual small rain
	3	67				
4	8	66	29 56	29 25	SSW 3	Cloudy
	3	67				
5	8	65		18 35	SSW 1	Lowring
	3	66				
6	8	70		15 19	NW 3	Dark and Cloudy
	11	65	32 5	10 34	NbE 3	Cloudy
8	11	66	32 12	7 41	SW 2	Cloudy and fair
9	11	64	31 31	5 40	SSE 2	Clear
10	11	69				
	3	66	30 25	4 41	SE 2	Fair
11	11	69	31 6	4 36	SW 1	Variable rain
12	11	66	31 39	2 48	SW 2	Cloudy
	5	62				
13	11	63	31 50	2	S 2	Squally
	4	63		E.		
14	11	64	32 28	52	Variable	Cloudy
15	11	62	34 0	3 50	N 3	Fair
	5	60				
16	11	63	35 15	7 52	NE 3	Fair
	5	63				
17	11	61	35 40	10 54	S 3	Fair
	6	58				
18	11	63	36 0	12 40	N 1	Fair
	5	61				
19	11	62	36 9	16 47	N 2	Hazy
	5	61				
20	11	64	35 39	19 48	N 2	Cloudy
	5	60				
21	11	63	35 9		Variable 1	Hazy. Saw the Cape
	5	61				

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May, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			S.	E.		
22	11	58	34 50	24 12	Variable	Rainy ..
	5	56				
23	8	59	34 47	25 50	Variable	Pleasant weather
	11	64				
24	11	66	35 10	28 31	W	Fair
	6	62				
25	11	65	34 37	30 3	Variable	Squally ..
	6	61				
26	11	64	35 29	29 41	S E	Fair
	6	62				
27	11	66	36 49	30 50	N E	Cloudy and squally
	5	65				
28	11	69	37 5	32 56	Variable	Squally
	5	68				
29	11	68	37 15	33 40	Variable	Unsettled and rainy ..
	5	66				
30	11	65	35 39	33 37	Variable	Lowring & rainy. ... L
	4	64				
31	11	63	36 36	34 22	Variable	Rainy .. and squally
	4	62				

June, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			S.	E.		
1	11	64	35 24	36 15	S	3 Squally T L rainy ..
	5	63				
2	11	66		37 36	S	2 Cloudy ...
	5	65				
3	11	66		39 15	N W	3 Fair
	5	64				
4	11	64	31 25	40 36	N W	3 ... T L
5	11	69	29 38	41 55	W	2 Cloudy
	5	69				
6	11	70	28 35	42 34	W N W	2 Fair
	5	71				
7	11	71	28 6	43 56	N E	2 Fair
	5	70				
8	11	74	25 48		S W	2 Fair
	5	72				
9	11	80	26 47		E b S	3 Fair
	5	76				
10	11	81	26 45		N W	2 Fair
	5	74				
11	11	69	26 4		W S W	3 Cloudy
	5	68				
12	11	71	24 15		S S E	2 Cloudy
	5	70				
13	11	72	22 19		S S E	3 Fair
	5	74				
14	12	74	19 40		S S E	2 Fair
	5	75				
15	11	75	18 18		S S W	2 Fair
	5	76				
16	11	77	16 41		S S W	2 Fair
	5	78				
17	11	79	14 21		S S W	2 Fair
	5	80				
18	11	80	12 45		S S W	2 Cloudy
	5	80				

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June, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
19	11	85	S.	E.		
	5	85	At Jo-		S b E 1	Fair
20	11	87	hanna		S S W 1	Cloudy ..
	6	85				
21	11	89			S E 1	Fair
	6	84				
22	11	86			0	Fair
	5	80	12 7		1	
23	11	80				
	5	79	10 24 43 47	S	2	Fair
24	11	80	8 21 43 55	S W	2	Fair, dews at night
25	11	80	6 12 44 6	S W	2	Cloudy, dews at night
	6	79				
26	11	79	4 31 44 14	S S E	2	Clear, dews at night
	5	79				
27	11	80	2 39 45 17	S S W	2	Fair, dews at night
	6	76				
28	12	79	0 44 46 56	S W	2	Cloudy, dews at night
	6	78	N.			
29	12	81	1 4 48 25	S W	3	Hazy
	6	79				
30	12	81	2 26 50 48	S S W	3	Fair
	3	83				
	6	79				

July, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			N.	E.		
1	12	82				
	6	81	3 29	53 15	W S W 3	Cloudy
2	12	83				
	6	82	4 34	56 12	S W b W 3	Hazy . . .
3	12	85				
	6	83	5 23	58 32	S W b W 3	Cloudy
4	12	85				
	6	84	5 55	60 44	W S W 2	Fair
5	12	84				
	6	85	6 14	62 23	W b S 2	Fair
6	12	85				
	6	83	6 43	64 0	W b S 2	Squally . .
7	12	86				
	3	88	7 11	65 44	W b S 2	Cloudy . .
8	12	87				
	3	88	7 23	67 6	S W 2	Cloudy .
9	12	87				
	3	88	7 47	68 46	S W b W 2	Cloudy
10	12	86				
	3	88	8 10	70 44	S W b W 2	Squally . .
11	12	86				
	3	87	8 12	72 22	W S W 2	Fair
12	12	87				
	3	89	7 23	74 0	S W 2	Cloudy
13	12	86				
	6	84	6 36	75 45	W 2	Cloudy . .
14	12	85				
	3	88	5 47	77 43	W N W 2	Fair
15	12	86				
	3	87	6 24		W 2	Fair
16	12	89				
	3	80	7 8		S b W 1	Fair
17	12	87				
	6	85	7 12		N b W 1	Cloudy
18	12	87				
	6	85	7 3		S E 1	Fair

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July, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	E.		
19	12	39	8 35		W S W 1	Cloudy
20	12	92	9 29		0	Fair
	6	86				
21	12	88	10 36		S W 1	Cloudy
	6	86				
22	12	88	11 23		S E b S 1	Fair
23	12	90	12 7		E 1	Cloudy
	6	98				
24	12	30	12 36		E 2	Fair
	6	96				
25	12	88	at Ma-	80 32		
26	12	90	dras		E 2	Squally . . . T L
	3	93				
27	12	90			S 2	Cloudy, T L
	3	93				
28	12	90			S 2	T L
	3	92				
29	12	93			S 2	Sea and land breezes.
	4	96				
30	12	90			S 3	Fair, sea and land br.
	4	94				
31	12	91			S 3	Cloudy, sea and land br.
	4	93				

August, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
1	12	93	at Ma- dras		land&sea 1	Cloudy, rainy .
	4	94				
2	12	92			land&sea 1	Rainy ..
	4	90				
3	12	90			land&sea 2	Fair
	3	91				
4	12	90			land 1	Cloudy
	4	92				
5	12	92			land 1	Rainy ..
	4	94				
6	12	89			land&sea 1	Fair
7	12	90			land&sea 1	Fair
	5	92				
8	12	93			land&sea 2	Rainy, T L
	7	96				
9	12	89			land&sea 2	Cloudy ..
	4	87				
10	12	93			land&sea 2	Rainy .
	4	88				
11	2	94			land 1	Rainy ..
	4	89				
12	12	93			land&sea 1	Fair
	4	90				
13	12	90			land&sea 3	Fair
	4	87				
14	12	89			land&sea 2	Fair
15	12	89			land&sea 1	Rainy .
	3	90				
16	12	90			land 2	Squally, rainy ..
	4	94				
17	12	94			land 2	Squally, rainy ...
18	12	93			land 1	Fair
19	12	90			S 3	Rainy
	4	87				
20	8	90			land&sea 2	Fair
	3	94				
21	8	92			land&sea 1	Fair
	3	95				

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August, 1771.

Day.	Hour.	Therm.	Lat. obs.		Long. from Lond.		Winds.		Weather.
			N.	E.					
22	11	94					S W	2	Cloudy
	4	87							
23	10	86	10 58	81 48			S E	2	Fair
	3	88							
24	10	85	10 0	83 20			E	2	Fair
	3	87							
25	10	85	8 52	85 18			S W	1	Cloudy
	3	87							
26	10	86	7 32	87 14			S W	2	Fair
	3	89							
27	10	85	6 41	89 4			S W	2	Hazy
	3	87							
28	10	85	6 19	90 44			S W	1	Hazy
	12	88							
	6	90							
29	8	85	6 7	92 3			W	1	Cloudy
	3	89							
30	8	85	6 1				W	2	Cloudy
	3	88							
31	8	87	5 38				W	1	Cloudy
	3	90							

September, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	E.		
1	8	87	5 47		0	Hazy
	3	93				
2	8	85	4 48		Variable 1	Cloudy
	3	92				
3	8	85	4 22		N W 2	Rainy . . .
	3	92				
4	8	85	3 45		W 1	Hazy, rainy, dews at n.
	3	89				
5	8	85	3 23		E 1	Rainy, T L
	8	88				
6	8	87	3 12		S E 2	Cloudy, at n. dews T L
	3	92				
7	8	85	3 23		S E 1	Cloudy, at n. dews T L
	3	90				
8	8	85	3 7		Variable 1	Cloudy, . . . dews T L
	3	89				
9	8	85			N 1	Rainy . . . T L at n.
	3	90				
10	8	80	2 0		N 1	Fair
	3	85				
11	8	85	2 16		S 1	Cloudy
	3	90				
12	8	85		102 11	Var. 1, 0	Rainy . . . T L
	3	89				
13	8	85	Saw		E 2	Fair
	3	87	Ma-			
14	8	85	lacca		E 1	Cloudy . .
	3	88				
15	8	85			S	Rainy . .
	3	88				
16	8	85	St.		W 1	Fair
	3	89	John's			
17	8	86			N 1	Rainy . . .
	3	89	1 44			
18	8	86			N 0	Fair
	3	89				
19	8	85	2 36		S 1	Squally . . .
	3	88				

September, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
20	8	85	N.	E.		
	3	87	3 4		S	2 Fair
21	8	84	4 44	105 21	S	2 Squally ... T L
	3	86				
22	8	83	6 5	105 36	S b E	1 Rainy ... and foggy
	3	79				
23	8	86	7 5	105 37	Variable	Cloudy ...
	3	87				
24	8	84	8 35		S W	2 Fair
	3	86				
25	8	83	9 58		S W	2 Hazy
	3	85				
26	8	84	10 46	112 2	W	2 Cloudy, T L
	3	86				
27	8	84	11 28	113 30	W	2 Unsettled & rainy ...
	3	86				
28	8	83	11 57	113 18	N	2 Squally, rainy ... T L
	3	86				
29	8	84	12 58	113 52	N W	1 Cloudy .
	3	86				
30	8	85	12 33	114 16		6 Clear and sultry
	3	88				

October, 1771.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	E.		
1	8	85	12 13	114 33	Variable	1 Cloudy
	3	88				
2	8	86	12 44	114 57	NWbW	1 Fair
	3	89				
3	8	85	13 15	115 17	NW	1 Fair
	3	90				
4	8	86	13 57	115 33	NW	1 Cloudy
	3	90				
5	8	86	13 57	115 55	NW	2 Cloudy
	3	90				
6	8	86	14 28	116 14	NW	1 Cloudy
	3	86				
7	8	86	14 43	116 11	Variable	Squally
	3	86				
8	8	85	14 33	116 14	Variable	Hazy T L
	3	87				
9	8	84	15 8	116 0	Variable	0 Rainy
	3	86				
10	8	85	16 7	115 12	NE	2 Dark and Cloudy
	3	87				L
11	8	86	16 36	114 52	NE	3 Cloudy L
	3	87				
12	8	85	17 0	114 49	NE b E	2 Cloudy, rainy
	3	88				
13	8	85	17 36	114 58	ENE	2 Cloudy
	3	87				
14	8	84	18 57	114 56	ENE	2 Fair
	3	86				
15	8	84	20 18	114 46	ENE	2 Cloudy
	3	86				
16	8	85	20 15	115 21	NE	3 Cloudy
	3	86				
17	8	84	21 9	115 18	NE	3 Cloudy
	3	86				
18	8	80	21 48		ENE	2 Fair
	3	84				

October, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
19	8	80	At Maccao.		S W	1 Fair
	3	85				
20	8	81			S W	1 Fair
	3	84				
21	8	82			S E	1 Fair
	3	85	At Wampoa, China.			
22	8	78			N	2 Fair
	3	80				
23	8	76			N	1 Fair
	3	83				
24	8	76			N	0 Fair
	3	84				
25	8	78			N	1 Fair
	3	84				
26	8	80			N E	2 Cloudy
	3	85				
27	8	79			N	1 Cloudy
	3	84				
28	8	80			N	1 Fair
	3	85				
29	8	75			N E	1 Cloudy and rainy
	3	78				
30	8	72			N	3 Cloudy
	3	74				
31	8	70			N	2 Rainy.
	3	72				

November, 1771.

Day.	Hour.	Therm.	Lat. obl.	Long. from Lond.	Winds.	Weather.
1	8	70	At China.		N	1 Rainy
	3	72				
2	8	71			N	1 Clear sunshine
	3	74				
3	8	75			N	1 Fair
	7	77				
4	8	75			N	1 Fair
	2	80				
5	9	78			N	1 Fair, dews at night
	4	79				
6	11	76			N	1 Fair, dews at night
7	10	78			N	1 Clear
	4	78				
8	10	70			N	2 Heavy dews at night
	5	77				
9	11	75			N	1 Fair
	4	73				
10	11	77				Fair
	4	75				
11	12	76			N	2 Cloudy
	4	78				
12	11	69			NE	3 Fair
	4	65				
13	12	66			N	3 Cloudy
	4	66				
14	11	67			N	2 Fair, dews at night
30	8	65				
	3	67			N	1 Fair, dews at night
	11	60				

From the 14th to the 30th of this month, no regular thermometrical diary was kept. The weather, though temperate and warm in the day-time, was chilly at nights, with heavy dews.

December, 1771.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
25	8	61	At			
	6	59	China.		N 2	Fair, at night dews
26	8	63			N 2	Cloudy
	3	62				
27	8	62			N 2	Fair, at night dews
	6	58				
28	8	62			N 2	Cloudy
	11	55				
29	8	60				
30	8	53			NE	Fair
	11	54				
31	8	54			S	Fair
	4	58				

From the beginning to the 25th, the weather was temperate in the middle of the day, the winds northerly and north-easterly, with dews at night. It rained continually on the 15th, but the rest of the month was fair.

January, 1772.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
1	8	56	At China.		S M	1 Fair
	3	66				
2	8	59			S M	1 Fair
	8	66				
3	8	60			S M	1 Fair
	8	67				
4	8	62			S M	1 Fair
	8	67				
5	8	63			S	1 Fair
	8	66				
6	8	53			NE	2 Cloudy
	8	56				
7	8	62			E	2 Fair
	4	60				
8	8	60			E	2 Fair
	4	63				
9	8	61			E	1 Cloudy
	4	62				
10	8	62			E	2 Fair
11	8	62			E	2 Hazy
	3	64				
12	8	64			E	1 Cloudy ..
	3	63				
13	8	62			E	2 Cloudy
	4	64				
14	8	53			NE	2 Cloudy
	4	54				
15	8	54			NE	2 Rainy •
	4	60				
16	8	56			NE	2 Cloudy •
	3	58				
17						
18						
19	8	49			N	1 Cloudy and rainy •
20	8	50				
	3	54				
22	8	54				Fair • at night
	3	54				

January, 1772.

Day.	Hour.	Therm.	Lat. obl.	Long. from Lond.	Winds.	Weather.	Hour.	Day.
23	8	52	At China.		NE	2 Fair	8	
	3	53						
24	8	48			NE	2 Rainy ..	8	
	4	50						
25	8	50			NE	3 Cloudy, . at night	8	
	8	46						
26	8	42			NE	3 Rainy	8	
	4	46						
27	8	50			NE	3 Rainy ...	8	
	4	52						
28	8	51			NE	3 Fair	8	
	4	53						
29	8	54			NE	2 Fair	8	
	4	56						
30	8	54			NE	3 Cloudy	8	
	3	55						
31	8	56			NE	2 Rainy ...	8	
	4	56						

February, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
1	8	55	At China.		NE	1 Rainy ...
	3	57				
2	8	56			NE	3 Rainy
	3	58				
3	8	58			NE	2 Fair
	6	59				
4	8	59			NE	2 Fair
	8	60				
5	8	60			NE	2 Rainy .
	3	59				
6	8	60			NE	1 Rainy .
	3	59				
7	8	60			NE	1 Cloudy
	8	62			S	1 Fair
9	8	63			S	2 Fair
	3	62				
10	8	64			W	2 Fair
	3	61				
11	8	64			SW	2 Fair
	3	63				
12	8	63			SW	1 Fair
	8	61				
13	8	58			N	1 Cloudy
	8	59				
14	8	57			N	2 Gloomy ...
	8	59				
15	8	59			N	1 Fair
	3	60				
16	8	62			N	2 Fair
	3	63				
17	8	62			S	2 Rainy ..
	3	61				
18	8	62			S	2 Cloudy ..
	3	60				
19	8	61			N	1 Cloudy
	3	62				
20	8	62			NE	1 Fair
	3	64				

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February, 1772.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
21	8	65	At China.		N	1 Fair
	3	66				
22	8	68			NE	1 Fair
	3	70				
23	8	68			N	1 Fair
	3	70				
24	8	69			NE	1 Clear sunshine
	3	70				
25	8	69			NE	1 Fair
	3	50				
26	8	70			NE	1 Fair
	3	72				
27	8	72			NE	1 Fair
	3	74				
28	8	74			S	2 Fair, at night dews
	3	76				
29	8	73			S	1 Fair, at night dews
	3	74				

March, 1772.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
1	8	73	At Wam- poa, China	E.	S	2 Fair
	3	74				
2	8	72			S	2 Cloudy
	3	74				
3	8	72			S	2 Gloomy, T L . . .
	3	72				
4	8	69			S	2 Gloomy . . .
	3	71				
5	8	59			N	3 Gloomy
	3	60				
6	8	58			N	2 Cloudy and dark
	3	53				
7	8	62	Mac- cao.		N	3 Cloudy
	3	67				
8	8	67	N.			
	3	70	18 0	114 35	E	2 Fair
9	8	75	18 8	115 16	E	2 Cloudy . .
	3	76				
10	8	77	16 51	115 24	Variable	1 Fair
	3	78				
11	8	79	16 16	115 20	Variable	2 Cloudy
	3	80				
12	8	79	14 54	115 1	Variable	2 Cloudy
	3	80				
13	8	81	13 26	114 4	E N E	2 Clear
	3	81				
14	8	82	12 32	113 24	E	2 Fair
	3	83				
15	8	83	11 40	112 44	E	Fair
	3	84				
16	8	83	11 2	112 5	E	1 Cloudy
	3	84				
17	8	83	10 23	111 26	E	2 Fair
	3	84				
18	8	83	9 15	109 42	E N E	2 Fair
	3	83				

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March, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	E.		
19	8	84	8 8	108 27	NE 2	Hazy
	3	84				
20	8	83	6 26	107 23	NE 2	Fair
	3	83				
21	8	84	5 6	106 28	NE 1	Fair
	3	83				
22	8	82	3 4		NE 3	Cloudy ..
	3	83				
23	8	84	2 13		ENE 2	Hazy
	3	83				
24	8	83	0 20		Variable 1	Cloudy ..
	3	84				
			S.			
25	8	82	1 14		NE 2	Fair
	3	83				
26	8	83			NE 1	Fair
	3	85				
27	8	84				
	3	86	2 31	In the Straits of Banca.	Variable 0	Cloudy
	12	108				
28	8	84	3 5			Cloudy .
	3	85				
29	8	83				
	12	106	3 7			0 Cloudy .
	3	87				
30	8	83	3 18			0 Cloudy .
	3	86				
31	8	83	4 38		E 2	Cloudy .
	3	86				

April, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			At	E.		
1	8	83	North Island		NW	1 Fair
	3	88				
2	8	82			NW	1 Fair
	3	89				
3	8	83			NW	1 Fair
	3	86				
4	8	83	S.	Saw		
	3	85	6 56	Java	NE	2 Cloudy
5	8	83				
	3	85	7 43	102 59	Variable	1 T L rainy
6	8	83				
	3	85	8 55	102 14	E	2 Cloudy
7	8	82				
	3	85	9 58	101 57	NE	3 Cloudy
8	8	83				
	3	84	11 41	101 12	E	3 Cloudy
9	8	82				
	3	83	13 18	99 26	SE	3 Cloudy
10	8	81				
	3	81	14 33	96 52	SE	3 Hazy
11	8	80				
	3	80 $\frac{1}{2}$	15 24	94 31	SE	2 Cloudy
12	8	80				
	3	80	15 56	91 53	SE	3 Hazy
13	8	80				
	3	80	16 24	89 7	SE	2 Cloudy
14	8	80				
	3	80	16 53	86 21	SE	2 Cloudy, at night
15	8	89				
	3	80	17 26	83 52	SE	2 Cloudy, at night
16	8	80				
	3	81	18 5	81 15	ESE	2 Cloudy, at night
17	8	80				
	3	80	18 42	79 3	E	3 Cloudy ecl. of moon
18	8	79				
	3	79 $\frac{1}{2}$	18 50	77 30	E	1 Fair

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April, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			S.	E.		
19	8	79	18 52	75 47	E b S 2	Fair
	3	80				
20	8	79	19 23	73 30	E b S 2	Fair
	3	79				
21	8	79	19 59	71 50	E b S 1	Fair
	3	79				
22	8	79	20 30	70 41	E b N 1	Fair
	3	79				
23	8	78	20 56	69 14	E b S 2	Cloudy
	3	79				
24	8	78	21 28	67 44	Variable 2	Cloudy, dews at night
	3	78½				
25	8	76	22 18	65 22	E b S 3	Cloudy, dews at night
	3	77				
26	8	78	23 9	62 43	Variable 2	Fair
	3	80				
27	8	79	24 3	60 54	E 1	Fair
	3	80				
28	8	80	24 52	59 42	Variable 2	Fair .. afternoon
	3	78				
29	8	77	25 17	59 6	N 1	Fair, T L .. at night
	3	76				
30	8	72	25 13	56 36	S b W 2	Cloudy
	3	72				

May, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			S.	E.		
1	8	74	26 13	54 c S	3	Fair
	3	75				
2	8	75	27 21	52 4 S E	2	Fair
	3	75				
3	8	76	28 4	49 49 E	2	Fair
	3	76				
4	8	74	28 57	47 39 E	3	Cloudy
	3	78				
	6	74				
5	8	74	29 51	45 31 E	2	Fair
	3	78				
6	8	74	30 43	43 29 E N E	2	Variable . . . T L
	3	75				
7	8	76	31 2	42 29 N W	3	Cloudy L
	3	76				
8	8	74	29 54	41 52 W	2	Fair
	3	75				
9	8	76	31 22	39 34 N E	3	Squally, L
	3	75				
10	8	76	30 56	39 22 S W	4	Unsettled L
	3	77				
11	8	65	30 48	39 2 S W	4	Squally
	3	68				
12	8	66	30 59	38 12 Variable	1	Fair
	3	69				
13	8	68	31 30	36 51 W	3	Cloudy
	3	68				
14	8	70	31 41	36 36 W	3	Fair, . . . at night
	3	71				
15	8	70	31 41	36 28 N	2	Hazy
	3	72				
16	8	76	32 16	36 16	0	Cloudy
	3	74				
17	8	75	33 30	35 18 N E	2	Fair
	3	72				
18	8	75	34 58	33 24 N	3	Hazy
	3	71				

REGISTER.

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May, 1772.

Day.	Hour.	Therm.	Lat. obl.	Long. from Lond.	Winds.	Weather.
			S.	E.		
19	8	74	35	53	16 W	1 Fair
	3	72				
20	8	62	35	42	31 34 NW	3 Cloudy
	3	60				
21	8	65	34	52	31 34 W	4 Cloudy
	3	65				
22	8	65	35	22	31 43 W	4 Squally . . .
	3	64				
23	8	65	35	3	31 34 W	3 Unsettled . . .
	3	65				
24	8	66	34	35	31 20 W	2 Rainy . . .
	3	66				
25	8	74	34	50	30 18 NE	3 Fair
	3	75				
26	8	70	35	17	29 33 NE	3 Hazy, L at night
	3	72				
27	8	70	35	47	28 8 SW	3 Fair
	3	65				
28	8	70	35	40	27 38 NW	2 Fair
	3	65				
29	8	68	35	9	27 20 W	2 Cloudy
	3	62				
30	8	65	34	58	27 4	0 Fair
	3	64				
31	8	64	35	10	25 54 NW	2 Fair
	3	63				

June, 1772.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			S.	E.		
1	8	63	35 22	25 41	NW 2	Cloudy, L.
	5	61				
2	8	55	35 3	25 37	W 2	Squally.
	3	57				
3	8	58	34 37		Variable 2	Cloudy
	3	59				
4	8	64	32 2		SE 2	Fair
	3	61				
5	8	65	31 35	14 39	E 2	Fair, dews at night
	3	62				
	6	60				
6	8	63	29 39	12 43	SE 2	Fair, dews at night
	3	63				
7	8	64	28 3	11 13	SSE 2	Fair, dews at night
	3	62				
8	8	64	26 45	9 58	SSE 2	Fair, heavy dews at n.
	3	66				
9	8	65	25 42	9 5	NW 1	Fair, heavy dews at n.
	3	66				
10	8	66	24 8	8 33	W 2	Cloudy
	3	67				
11	8	67	23 20	8 8	SbE 1	Fair
	3	68				
12	8	71	23 0	7 53	SSE 1	Clear
	3	68				
13	8	68	22 4	7 3	SW 2	Clear
	3	67				
14	8	68	20 3	5 27	SbE 2	Cloudy.
	3	67				
15	8	71	18 58	3 31	SEbS 3	Cloudy.
	3	67				
16	8	72	17 21	1 29	SE 3	Cloudy
	3	69				
				W.		
17	8	70	16 14	0 31	SE 3	Cloudy.
	3	68				

REGISTER.

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June, 1772.

Day.	Hour.	Therm.	Lat. obl.	Long. from Lond.	Winds.	Weather.
			S.	W.		
18	8	72	16 0	2 46	SEbS 2	Fair
	3	72				
19	8	72	At St.		ESE 2	Cloudy
	3	73	Helena			
20	8	72			SE 1	Fair
	3	73				
21	8	74			SE 1	Cloudy
	3	73				
22	8	72			SE 1	Squally
	3	75				
23	8	75			SE 1	Clear
	3	75				
24	8	75			SSE 1	Cloudy
	3	74				
25	8	74			SE 1	Cloudy
	3	74				
26	8	74			SE 1	Fair
	3	73				
27	8	75			SE 2	Squally
	3	75				
28	10	75		7 10	SE 2	Squally
	3	74				
29	8	73	14 42	8 57	SEbE 2	Fair
	3	73				
30	8	73	13 2	10 29	SE 2	Cloudy
	3	74				

METEOROLOGICAL

July, 1772.

Day.	Hour.	Therm.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			S.	W.		
1	8	75	11 40	11 32	SE b S 2	Dark clouded sky
	3	74				
2	8	76	10 31	11 50	SE b S 2	Cloudy
	3	75				
3	8	77	9 39	12 15	Variable 1	Cloudy
	3	76				
4	8	78	8 54	12 58	SE 1	Fair
	3	79				
5	8	80	8 17	13 37	SE b S 2	Cloudy
	3	79				
6	8	80	6 56	14 26	SSE 2	Cloudy
	3	80				
7	8	80	5 13	15 28	SE 2	Fair
	3	81				
8	8	82	3 39	16 36	E 2	Fair
	3	80				
9	8	81	1 38	17 56	SE 3	Fair
	3	80				
10	8	82	N.			
	3	79	0 25	19 12	SE 3	Clear
11	8	82	2 19	20 22	S b E 2	Cloudy
	3	80				
12	8	81	3 57	21 22	SSE 2	Cloudy
	3	82				
13	8	83	5 12	21 48	SSE 2	Cloudy, L at night
	3	85				
14	8	86	6 10	22 3	NNW 1	Rainy
	3	78				
15	8		7 39	22 29	Variable	Rainy . . .
	3					
16	8	82	8 26	22 44	SSE 1	Cloudy . . . T L
	3	79				
17	8	79		22 56	Variable 1	Cloudy
	3	78				
18	8	76	8 35	23 4	Variable 0	Squally . . .
	3	76				

REGISTER.

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July, 1772.

Day.	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
19	8	76	N.	W.		
	3	77		23 22	Variable 0	Rainy
20	8	79		23 55	Variable 1	Cloudy . .
	3	78				
21	8	80	11 0	24 30	NW 2	Cloudy .
	3	82				
22	8	84	11 23	25 10	Variable	Squally .
	3	85				
23	8	84	12 7	25 54	NE 2	Cloudy .
	3	84				
24	8	82	13 35	26 32	NE 2	Cloudy . .
	3	80				
25	8	81	15 5	27 24	NE 3	Cloudy .
	3	82				
26	8	80	16 9	28 56	NE 3	Fair . .
	3	82				
27	8	79	17 39	30 31	NNE 2	Cloudy, . night
	3	81				
28	8	80	19 0	32 14	NE 3	Cloudy .
	3	82				
29	8	80	21 2	33 48	W 2	Cloudy .
	3	80				
30	8	81	23 18	34 17	ENE 3	Cloudy . .
	3	82				
31	8	82	25 27	35 38	NE 3	Fair .
	3	83				

August, 1772.

Day.	Hour.	Therms.	Lat. obs.	Long. from Lond.	Winds.	Weather.
			N.	W.		
1	8	81	27 9	37 17	NE 2	Cloudy
	3	82				
2	8	80	28 15	38 33	NE E 2	Cloudy, at night
	3	80				
3	8	82	29 41	38 59	NE 2	Fair
	3	82				
4	8	82	30 50	38 41	E 1	Cloudy
	3	83				
5	8	82	32 16	38 33	E S E 1	Cloudy
	3	84				
6	8	85	32 0	38 56	NE 0	Fair
	3	86			NE 3	Rainy
7	8	79	33 21	39 42	NE 2	Cloudy
	3	80				
8	8	79	34 21	40 36	NE 2	Fair
	3	80				
9	8	81	34 58	40 44	S 1	Cloudy
	3	80				
10	8	81	36 16	39 51	S E 2	Cloudy
	3	82				
11	8	79	37 53	38 29	S W 2	Fair
	3	80				
12	8	78	39 25	36 37	N W 2	Cloudy
	3	80				
13	8	74	40 0	35 22	W 1	Cloudy
	3	78				
14	8	76	41 0	33 34	W 2	Hazy
	3	75				
15	8	76	41 4	31 56	N E 2	Cloudy
	3	77				
16	8	75	39 50	30 41	E N E 2	Fair
	3	76				
	69					
17	8	75	40 21	31 13	E 2	Fair
	3	74				

August, 1772.

Day	Hour.	Therm.	Lat. obf.	Long. from Lond.	Winds.	Weather.
			N.	W.		
18	8	74	40 42	29 0	S W 1	Fair
	3	74				
19	8	72	41 48	26 53	W 2	Hazy
	3	74				
20	8	72	42 43	24 54	W 3	Squally
	6	65			N E 3	
21	8	68				
	3	70	43 23	21 7	N W 3	Cloudy
	6	68				
22	8	66	44 37	17 59	N W 4	Rainy . .
	6	64				
23	8	62	45 57	14 38	N W b N 4	Squally thick weather
	6	63				
24	8	63	47 24	12 15	N N W	Squally, cold at night
	6	61				
25	8	62	48 38	10 48	N W 2	Cloudy, very cold at n.
	6	62				
26	8	60	48 10	9 30	S S E 2	Hazy and squally
	6	62				
27	8	64	48 36	6 19	E 2	Hazy and raw weather
	6	63				
28	8	64	49 12	2 34	S W 4	Cloudy and thick
	6	63				
29	8	65	49 21		S W 2	Cloudy, at night thick
	6	63			S W 3	and hazy
30	8	65			S W 3	Hazy & thick weather
31	8	65	Isle of		W 3	Hazy
	6	64	Wight			

CHAP.

THE UNIVERSITY OF CHICAGO

1911

Time	Lat.	Long.	Wind	Temp.	Bar.	Clouds
12	41 15	87 15	N	55	30.1	100
1	41 15	87 15	N	55	30.1	100
2	41 15	87 15	N	55	30.1	100
3	41 15	87 15	N	55	30.1	100
4	41 15	87 15	N	55	30.1	100
5	41 15	87 15	N	55	30.1	100
6	41 15	87 15	N	55	30.1	100
7	41 15	87 15	N	55	30.1	100
8	41 15	87 15	N	55	30.1	100
9	41 15	87 15	N	55	30.1	100
10	41 15	87 15	N	55	30.1	100
11	41 15	87 15	N	55	30.1	100
12	41 15	87 15	N	55	30.1	100
1	41 15	87 15	N	55	30.1	100
2	41 15	87 15	N	55	30.1	100
3	41 15	87 15	N	55	30.1	100
4	41 15	87 15	N	55	30.1	100
5	41 15	87 15	N	55	30.1	100
6	41 15	87 15	N	55	30.1	100
7	41 15	87 15	N	55	30.1	100
8	41 15	87 15	N	55	30.1	100
9	41 15	87 15	N	55	30.1	100
10	41 15	87 15	N	55	30.1	100
11	41 15	87 15	N	55	30.1	100
12	41 15	87 15	N	55	30.1	100
1	41 15	87 15	N	55	30.1	100
2	41 15	87 15	N	55	30.1	100
3	41 15	87 15	N	55	30.1	100
4	41 15	87 15	N	55	30.1	100
5	41 15	87 15	N	55	30.1	100
6	41 15	87 15	N	55	30.1	100
7	41 15	87 15	N	55	30.1	100
8	41 15	87 15	N	55	30.1	100
9	41 15	87 15	N	55	30.1	100
10	41 15	87 15	N	55	30.1	100
11	41 15	87 15	N	55	30.1	100
12	41 15	87 15	N	55	30.1	100

CHICAGO

C H A P. IV.

A GENERAL ACCOUNT OF THE COUNTRY, AIR, AND
PREVAILING DISEASES, IN VARIOUS PARTS OF
ASIA.

HAVING, in the first chapter, made some observations upon the weather and diseases, which most frequently occur in voyages to the East Indies, I shall now proceed to give a general account of the situations; changes of the seasons, and other circumstances; which produce land diseases, in various parts of Asia.

I shall begin with taking a cursory survey of the coasts of Malabar, and Coromandel: then passing to Bengal, I shall proceed to the eastern coast, from Aracan to the streights of Malacca, and islands adjacent: and lastly end with the port of Canton, which is now the only part of the Chinese empire frequented by Europeans.

SECT.

S E C T I.

THE COASTS OF MALABAR AND COROMANDEL.

CAPE Comorin lies in about 7 deg. 56 min. N. Near the shore, the land is low, and covered with trees; but at a little distance from the sea, a ridge of high mountains takes their rise, and extending northward, divides the coast of Malabar from that of Coromandel. These are usually called the Gatta, or Balagate mountains. The difference of the seasons, which are exactly opposite on the two coasts, depends entirely on the intervention of these high mountains; the coast of Malabar enjoying dry serene weather, while the opposite coast is drenched in rain.

The first settlement on the Malabar coast of any note, belonging to the English, is Anjanga. Near the shore, the land is low, and woody; and the water bad.

Cocheen, belonging to the Dutch, stands low, and is situated on the banks of a river. In the wet season, torrents of rain descending

descending from the mountains, render the water thick and muddy. It is supposed that the monstrous swelled legs, to which the natives are subject, so well known over all India by the name of Cochin legs, are occasioned by the impurities of these waters. However this may be, from the longest residence, no European becomes liable to the same disease. It cannot, indeed, be properly termed a disease: for the natives of Cochin are extremely healthy; neither is the bulk of their legs the least inconvenience to them. No preternatural weight is to be observed: they are strong-bodied, and enjoy as much agility, as if they were totally exempt from this unseemly deformity.

From Cochin to Calicut, where the English have a factory, the coast is beautifully diversified with rising hills and mountains.

Tellicherry, a town and fort, belonging to the English, lying in 11 deg. 50 min. north latitude, is finely situated; abounds with refreshments; and is extremely healthy.

The island and city of Goa, the capital of the Portuguese, is now likewise tolerably

G

ably

ably healthy. But this climate was represented formerly to have been productive of malignant fevers, carrying off Europeans immediately on their first arrival. Nor is this to be wondered at, when we are told, that the only method of cure was repeated bleeding; even to five times a day, in small quantities*.

The island of Bombay, lying in 19 deg. north latitude, of itself is barren; and the Gentoos on the continent, believing in transmigration, from a principle of religion, allow none of their cattle to be slaughtered. The inhabitants, however, are abundantly supplied with provisions from Surat. This small island is very populous. The natives from the continent flock under the English government, where their liberties are more secure. The town and fort, which are situated on the south-east of the island, stand dry; and, from the improvements which have already been made, it may be esteemed amongst the number of our healthiest settlements.

The

* Balæus's description of the coast of Malabar.

The last place I shall mention is Surat: the city, situated about fifteen or sixteen miles up the country, is large, spacious, and pretty healthful.

The whole coast of Malabar is temperate, and healthy, when compared with many of our settlements in India. It enjoys cool refreshing land and sea breezes upwards of six months in the year: which generally begin in October, and continue till the end of March. But as soon as the south-west monsoon sets in, in April, these breezes become uncertain; and, for the most part, disappear. The dry season, on this coast, is from October to April; and the rainy season in the opposite months.

In the wet season, Europeans are subject to fevers and fluxes: the last is the most frequent distemper, which, however, is never so fatal as at Bengal, Batavia, and other unhealthy places in the East Indies. The cholera is also a very frequent disease at Bombay: and, on this coast, the barbers is more common than in any other part of India. This last disease is a species of palsy, affecting the limbs, and frequently the organs of speech, with inability of motion. It is brought on

by exposition to the cold land winds in January and February. It is very obstinate, and seldom removed till a return of the warm weather : but the few Europeans, whom I saw ill of it, were easily cured by a change of climate, and a sea voyage, without having recourse to any medicine.

Before I leave this part of the East Indies, I shall take notice of the temperature of some places, frequented by Europeans, in Persia and Arabia.

Gambroon is situated on a flat sea shore, at the entrance of the Persian Gulph, near the foot of a sandy barren mountain. The air is so intollerably hot that foreigners can scarcely live here during the hot months, from May till September : and even the natives are obliged to retire to their country houses on the mountains. December, January, and February are the cool months. Those who venture to reside here during the hot season, are subject to dangerous fevers of the intermittent or remittent type, often terminating in a diseased state of the liver.

The same temperature prevails at Baffora, Bagdat, and at Karec, in the Persian Gulph,

Gulph, where the Dutch * have a factory; and the natives, as well as foreigners, are subject to fevers and fluxes in the rainy season.

Mocha situated at the entrance of the Red Sea in 13 : 45 north, is a city of considerable extent. The heat here is very excessive; but the air being pure, it is tollerably healthy. I was informed by a gentleman who often visited this city, that the night dews were very salutary; and that he, according to the custom of the place, slept every night on the top of his house, to enjoy their cooling effects.

I shall now proceed to the eastern coast of this peninsula, usually called Coromandel.

The southern part of this coast is little frequented, till we arrive at the pleasant Dutch settlement at Negapatan; lying in 11 deg. 10 min. north latitude, abounding with refreshments of all sorts. A little farther up is the Danish settlement of Tranquebar.

The first settlement which the English had was Fort St David's, now in ruins;

G 3

but

* See Mr. Ives' Journal.

but they reside at Cadelore, a pleasant village, lying about three miles to the southward of the fort.

Madras is our only presidency on this coast. The fort is strong, the houses of the residents well built and airy. A pleasant village, called the Black Town, lies to the northward about a mile, and is promiscuously inhabited by the English; Gentoo merchants; and Banians. This village is populous and healthy. All the country around is dry, flat, and pleasant; till we arrive near St. Thomas's Mount, eight miles from Madras; where the residents are continually making parties of pleasure, which greatly contribute to their health; the air here being particularly pure and salutary.

The French, English, and Dutch, have factories at Masulipatan: but the pleasant, and healthy settlement of Vizagapatán belongs entirely to the English.

The soil on this coast, near the shores, for a mile or two, is dry and sandy: but the inland country is diversified with hills and verdant pastures. I have been informed by a gentleman in India, who had travelled all over the Carnatic, that the
whole

whole tract of country is, in general, remarkably pleasant and fertile: and even in the warmest months, the air is so salutary, that an exposition to the sun, fowling, and athletic exercises are attended with no inconveniency to health. At Madras, however, the excessive heat renders such amusements impracticable in the height of the day.

On this coast, the temperature of the air is various at different seasons of the year. In January, February, and March, the weather is very temperate, and generally fair: but in May, June, and July it becomes unsupportably sultry, owing to the land winds passing over long tracts of sand. These winds often blow with such violence, that the air is obscured with dust; however these hurricanes are of short duration, and always disappear with the rains in October.

The land winds generally blow from midnight till noon; and are succeeded by refreshing sea breezes, which continue till nine or ten at night, and frequently the whole night. By these means, the effects of a hot air are prevented; which, if constant for any length of time, would

produce baneful complaints : besides, these hot suffocating land winds are not always constant, whilst refreshing sea breezes seldom fail to return regularly during the hot months.

The north-east monsoon, which, on this coast, ushers in the wet season, begins in October, and continues till March ; but the rains seldom last longer than December. As there are no evaporations in consequence of the rains, these being absorbed almost as soon as they fall, the country being dry, and there being no marshes of any extent, the wet season is the most healthy period in the year.

From this account it will appear, that this coast must be particularly salutary. The residents, indeed, enjoy good health. The only diseases to which they seem to be particularly subject are great secretions of bile, accompanied with nausea, sickness at stomach, and sometimes a purging. The people at Madras are so well acquainted with this complaint, that they are generally their own physicians : and, in the warm months, it is no uncommon thing to see a patient one hour vomiting abundance of gall, and the next hour
taking

taking a ride into the country. This disease is in general so mild with them, that it seldom requires any other cure than the exhibition of a gentle puke, or laxative.

But amongst new settlers, these bilious diseases are more violent, and dangerous, as we have already * observed; and often terminate in cholera morbus; bilious choleric, with spasmodic affections † of the muscles; and in dysentery.

Amongst

* See page 41—42.

† Spasmodic affections were the first diseases which appeared amongst the troops that arrived at Madras, in October, 1782. They were not only extremely general, but carried off fifty men within the first three days after they were landed; and in less than a month upwards of a thousand were attacked. These complaints began with coldness of the hands, feebleness of the pulse, and spasmodic contractions of the extremities, soon extending to the muscles of the abdomen, diaphragm, and ribs. The muscles soon became rigid as cartilages; sometimes keeping the body immoveably extended; sometimes bending the trunk through its whole length forwards; and sometimes, though seldomer, backwards.

“ The hands and feet were sodden with cold sweats; the
“ nails livid; the pulse feeble and frequent; and the breath
“ so condensed as to be both seen and felt, issuing in a cold
“ stream at a considerable distance. The thirst was insatiable;
“ the tongue whitish, but never dry: vomitings became
“ almost incessant; the spasms, cold sweats, and thirst en-
“ creased with the vomitings; which last, soon terminated

“ the

Amongst Europeans who undergo much fatigue, and particularly amongst the military, the hepatitis; swellings, and obstructions of the liver, are very frequent diseases; and a number of the soldiers are annually carried off by fevers and fluxes. It may therefore be concluded, that although the coast of Coromandel is by far the most healthy of all our settlements in India, yet the diseases which occur there, do not differ from those of the more unhealthy situations; but by their being milder in their nature, and seldom epidemic.

We
 “the existence of the patient.”——“Some died in the first
 “hour of the attack: others lived a day or two with remif-
 “sions; when they died either of universal spasms or an
 “apoplexy: on dissection, it appeared that no injury had
 “been sustained by the brain, liver, gall bladder, stomach or
 “heart.”

Dr. Girdlestone, from whom the above account is taken, considers cold as the most general exciting cause of these spasmodic affections: and it appears that not only the damps from the earth; but drinking large quantities of cold water after intoxication, and sudden exposition to the winds when wet with perspiration, had the most powerful influence in producing a sudden and dangerous attack.——See Girdlestone's essay on spasmodic affections in India; and for the cure, the chapter on tetanus, in the following pages.

We may likewise observe, even on this healthful coast; that the fair sex, enjoying, indeed, a remarkable immunity from the endemic and popular diseases of a warm climate, are, however, subject to many inconveniences after a very short residence: The lovely bloom and ruddy complexions, they bring from Europe, are soon converted into a languid paleness: they become supine, and enervated; and suffer many circumstances of ill health peculiar to the sex, from mere heat of climate and relaxation of system. Parturition, however, is not attended with such great danger here as at Bengal; neither is the puerperal fever of such a putrid nature.

The southern parts of India are subject to very great heats; which would be insupportable, without the periodical returns of the monsoons. As we have so frequent occasion to use this term, it will not be improper to give some explanation of it before we proceed farther.

On the southern coasts of Asia, from Arabia to China, the winds are periodical, blowing in one direction one half of the year, and in the direct opposite during the

the other. These winds, by navigators, are called monsoons; and the regularity of their direction seems to depend on the annual motion of the sun. When the sun's declination is north, betwixt March and September, the monsoons, or periodical winds, are westerly: and as soon as his declination is south, betwixt September and March, the monsoon shifts, and blows easterly during these six months. On the coasts, as well as over all the Arabian, Indian, and Chinese seas, the periodical winds are invariably regular, the south-west monsoon blowing from April to March, and the south-east monsoon in the opposite months. But inland, on the continent, great variations take place, owing to the soil and other dispositions, which alter the course of these winds*.

The south-west monsoon brings the rainy season with it in every part of India, except on the coast of Coromandel, owing to the opposition of the high mountains of the Balagate. On this coast, the wet weather happens in the north-east monsoon,

* For a more particular account, see Philosoph. Transact.

soon, which every where else blows clear and fair.

At the time of the shifting of the monsoons, a great change in the weather takes place. The sky generally becomes dark, cloudy, and boisterous; and torrents of rain descend, accompanied, with thunder and lightning. At Bengal, and in China, the violence of these storms is such as to render all navigation extremely dangerous on these coasts. On shore, trees are torn up by the roots; and great damage done to houses.

Such tremendous storms as these happen frequently in warm climates, about the equinoxes: in the West Indies, they are called hurricanes; in the East Indies, the breaking up of the monsoons; and in the Chinese seas, perhaps from their greater violence, they are distinguished by the name of a typhoon.

Such awful convulsions of the elements as happen in these storms, are beautifully described by Virgil, in the following lines:

Sæpe

110 OF THE AIR AND DISEASES

Sæpe etiam immensum cœlo venit agmen aquarum,
 Et fœdam glomerant tempestatem imbris atris
 Collectæ ex alto nubes: ruit arduus Æther,
 Et pluvîâ ingenti fata læta, boumque labores
 Diluit: implentur fossæ, et cava flumina crescunt
 Cum fonitu, fervetque fretis spirantibus Æquor.
 Ipse pater, mediâ nimborum in nocte, coruscâ
 Fulmina molitur dextrâ: quo maxima motu
 Terra tremit, fugère feræ, et mortalia corda
 Per gentes humilis stravit pavor:
ingeminant Austri, et densissimus imber:
 Nunc nemora ingenti vento, nunc litora plangunt.

SECT.

S E C T II.

BENGAL, THE EASTERN COAST AS FAR AS
MALACCA, AND THE ISLANDS ADJACENT.

THE extensive kingdom of Bengal passes through several latitudes. In many places the soil is rich; the air serene and temperate; and the country delightful; but in the province lying on the mouths of the Ganges the soil is marshy; the country flat; and covered with wood. Owing to these circumstances, the natives, and still more the Europeans, enjoy various degrees of health.

Calcutta, the chief settlement and capital of the English, is populous and extensive; and is situated above a hundred miles up the river Hughley. The houses of the residents are spacious, and beautiful; and made as cool as art can invent; the apartments being large and lofty, and almost every house having a portico of the extent of the front, supported on columns. In some of the best houses, this gallery is
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continued quite round the building, and is always of the same height. Such a construction is not only highly ornamental, exhibiting the appearance of splendid palaces, but is very salutary, on account of the free admission of air. Betwixt the columns of the portico, canvas hangings are fixed; which, by being occasionally moistened with water, render the suffocating air, in some measure, cool. The rest of the city is inhabited by Portuguese, Armenians, Banians, and black merchants. But the most considerable part of the natives live in streets, or squares, (usually called compounds) their habitations only consisting of small huts, closely situated, and only defended from the inclemency of the weather by mats.

The new fort stands about a mile down the river, on flat, marshy ground. The barracks are roomy, cool, and elegant; and the whole is surrounded by strong fortifications. The land about this place is cleared for many miles; but, from its low situation, is very damp and wet in the rainy season.

About three miles south from Calcutta, there is a large collection of water, usually called

called the Salt-water Lake, which has a communication with the sea. This lake extends many miles up the country, and joining with other branches of the Ganges, it overflows in the rainy season. The sides of this large pool of water are very swampy; and in many places forms fens, overgrown with sedges and reeds. As soon as the rains are over, the lake subsides, and leaves on the ground abundance of mud, slime, prawns, and other fish, which soon putrify with the heat of the season, and occasion very noxious exhalations. The land to the northward does not afford a more favourable prospect, being low, swampy, and fit only for the cultivation of rice. The whole country, as far as our view can extend, appears flat, and no hills nor mountains are to be seen.

From Calcutta to Gulpee, the usual station of our ships, the beach is muddy; the tides run high; and, on each side of the river, the land is uncultivated, and so much overgrown with trees, shrubs, and long grass, that it is one continued thicket; affording convenient haunts for tygers, and other wild animals. Several creeks here and there run off from the

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river;

river; and some villages, the residences of the natives, are situated upon its banks; the most desirable and healthful of which is Fulter, where the Dutch ships are stationed.

The village of Culpee is situated about a mile up a creek, in low marshy ground. The beach here, as well as the creek, is very muddy and slimy at low water. The land on each side is uncultivated, wet, and overgrown with impenetrable shrubs, and long grass. The whole country around, for a considerable extent, has the same unfavourable aspect; and in the rainy season is converted into a pool of stagnant water. In short, there is not in the whole world a more unhealthy situation than Culpee.

The remaining stations for ships that trade to Bengal, are Cogeree and Ingelee. The first of these is a village situated on a wide extended plain, which is tolerably dry, and free from underwood, and may therefore be reckoned healthy when compared with the unfavourable place we have just now described.

In the year 1768, although the Dutch ships which lay at Cogeree were not totally
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exempted from the general sickness of the season, yet diseases were attended with no great mortality amongst their seamen.

Ingelee is tolerably situated; the ships lie more out at sea; and the sickly season being over before they drop down here to take in the remainder of the cargo for Europe, the seamen of all nations enjoy good health; and those who have been weakened by preceding sickness recover sooner than at any of the places we have mentioned.

The rainy season at Bengal begins in June, and continues till October. During that time, scarcely a single day passes without deluges of rain, accompanied with thunder and lightning. In August and September, the air is moist, intolerably sultry, and stifling, with seldom an intervening breeze: for there is not here, as in other parts of India, a regular succession of land and sea winds.

The dry and hot season is from April till June. But in May and June the air is particularly sultry, the winds hot, and few or no showers fall, unless accompanied with storms; at which time torrents of rain descend which cool the air. And it is observed by all who reside at Bengal,

that if these storms be frequent, they render this period healthy: so that, even in this unwholesome country, the rains, which do not overflow the grounds and become stagnant, are conducive to health, and prevent diseases.

The cold season is from the end of November till March; and, during this period, there is not in the whole world a more delightful place than Calcutta.

It is not at all surprizing that the situations we have mentioned should be annually visited with fatal and destructive diseases: for, independent of great heat, this would be the case in any other flat and marshy country.

As I had an opportunity of seeing the epidemic diseases which raged here in 1768—9, in all their different forms, I shall just mention the prevailing diseases through the different periods of the year, leaving the detail of symptoms and method of cure to another place*.

The remittent fever and dysentery are the fatal and prevailing complaints of the wet months, which begin in August and continue

* Vide Part II.

tinue till November. During the beginning of the epidemic, the fever is attended with the greatest danger and malignity. It frequently carries off the patients in twelve hours; and, if it be not put a stop to, generally proves fatal on the third or fourth day. In August, the remissions are very imperceptible; in October, they become more distinct: and, as the cold weather comes on, the fever becomes a regular intermittent. At that time too, the putrid dysentery begins to rage along with the fever. At the beginning, it is impossible to distinguish the two diseases, which are frequently combined: and, what is still worse, it often happens, when the fever is removed, and the patient in a convalescent state, he falls into the dysentery: his strength and spirits being sunk, after lingering out sometimes a few days, and sometimes weeks, death closes the scene, and puts an end to his miserable existence. Both the fever and flux, if obstinate, have an equal tendency to terminate in abdominal obstructions, particularly in fatal swellings, and suppurations of the liver.

These diseases were very fatal to many Europeans, particularly to new-comers in the year 1768. But I am informed, that, in the year 1770, when there was a scarcity of rice, it was computed, that about eighty thousand natives, and one thousand five hundred Europeans, died at Bengal. The streets were crowded with funerals; the river floated with dead carcases; and every place exhibited the most melancholy scenes of disease and death*.

During the sickly seasons at Bengal, the uncertainty of life is so great, that it frequently happens, that one may leave a friend at night in perfect health who shall not survive the following day. There have been several melancholy instances of persons who have returned home in a state of perfect health from performing the last duties to a deceased friend, and have next day been numbered with the dead.

But the cool agreeable season, from December to March, is productive of no prevailing diseases. The complaints to be met with

* It has been a religious custom of the natives, from time immemorial, to bury their dead in the river Ganges. The deceased, as soon as their breath is out, are carried below high-water mark, and suffered to lie there till the approach of the tides carry them off.

with are in general the consequences, or remains of the diseases of the former period. The complaints which the Europeans are subject to in the dry months are the cholera, and diarrhœa. Fluxes and fevers are then seldom epidemic; and when they do happen, are not attended with much danger.

Chandernagore and Chinchura, the French and Dutch settlements, on the opposite side of the river Ganges, being situated farther up the country, where the soil is better, and free from marshes, are tolerably healthy, even during the rainy season. And when the same diseases happen, they are neither so prevalent; nor are they attended with so great malignity.

I now proceed to take a survey of the eastern coast of the Bay of Bengal.

From the mouth of the Ganges to Chitagong, the coast, which may be considered as a chain of small islands, is very low. Chitagong is a subordinate factory belonging to the English. It is healthier than Calcutta; however, all Europeans residing on the coast of Aracan are subject to fevers and fluxes, which are more frequent during and after the rains.

The coasts of Pegu and Tenasserim are only frequented by country vessels, the trade consisting of Tutenague, which they carry to the different parts of India. The mortality, which frequently happens among the European officers who trade there, shews the climate to be very unhealthy. The rains and sickly season happen in the same months as at Bengal; the diseases are the same, and attended with an equal degree of malignity.

The islands of the Negrais, lying near the coasts of Pegu, are low; and, in many places, covered with woods, from which arise great exhalations. The East-India company formerly endeavoured to make a settlement here, but were prevented by the natives; which, in all probability, has saved the lives of many Europeans; who would undoubtedly have fallen a sacrifice to the insalubrity of the climate.

The Malay coast is but little known. In coasting along, the aspect of the country is very unfavourable; it appears low, woody, and uncultivated.

The Dutch settlement of Malacca, situated on the extremity of this peninsula, lying in 2 deg. 12 min. North, is pleasant
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and healthy. The situation of the town, and particularly of the fort, is elevated. The lands near the town, agreeably to the known industry of this nation, are well cultivated; and the country around is interspersed with rising hills, and mountains. The air is not excessively hot, being refreshed almost every day with land and sea breezes; and pleasant showers. Here the residents enjoy uninterrupted health and sound constitutions; and, from the accounts of all the English ships who have wintered here, we may include it amongst the number of the most healthy European settlements in India.

Batavia, the chief settlement of the Dutch in India, lying in latitude 6 : 10 South, is situated in a very large open Bay, on the North side of Java. The city is walled round, and has many canals cut through it, planted with rows of trees on each side. These canals extend into the country, which, for many miles, is flat, and laid out into large gardens, thickly planted with fruit trees. Near the city there are a great number of villas, and the roads leading to them are also thickly planted with rows of trees. These improvements
which

which have been effected by incredible industry, although beautiful to the eye, render this settlement peculiarly unhealthy. The canals being muddy, and containing stagnant water, produce noxious exhalations in the dry season; and, in the wet months, the rain overflowing their banks, a great quantity of slime and filth is left upon the ground, which corrupts the air.

But the inland country is hilly, and in many places temperate, especially from May till November. The insalubrity of the city might be, in a great measure, removed by erecting sluices to keep the water constantly running in the canals; and by cutting down the wood, so as to occasion a free circulation of air.

The rainy season is from November to May, during which time remittent, malignant continued fevers, and the dysentery rage with great fatality. Capt. Cook, in his first voyage, anchored here on the 3d of October, 1779, the whole crew, except Tupia, a native of Otaheite, being in the most perfect health. But in the course of nine days they experienced the fatal effects of the climate; and buried seven people at Batavia. On the 3d of
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December, the ship left the harbour. At that time the number of sick amounted to forty: and the rest of the ships company were in very feeble condition. When the ship anchored at Prince's Island, in the straits of Sunda, the sickness increased, and they buried twenty-three persons more in the course of about six weeks.*

The Grenville Indiaman, which touched at this Island, in 1771, suffered equally from the malignity of the air. A few were taken on board, when the ship sailed from Batavia, ill of a malignant fever; which spread by contagion at sea, and carried off great numbers. I visited several in this ship, when she arrived at China, who

* "The seeds of the disease which we received at Batavia, began to appear with the most threatening symptoms in dysenteries and slow fevers, lest the water, which we had taken in at Prince's Island, should have had any share in our sickness, we purified it with lime, and we washed all parts of the ship between decks with vinegar, as a remedy against infection." Mr Banks, now Sir Joseph Banks, was among the number of the sick, and, for some time, there was no hope of his life. "We were very soon in a most deplorable situation; the ship was nothing better than an hospital, in which those who were able to go about, were too few to attend the sick, and we had almost every night a body to commit to the sea."

Cook's Voyage by Hawksworth.

who were reduced to mere skeletons, by the duration of the fever and dysentery; both of which were most certainly propagated by contagion.

Those parts of Sumatra, lying immediately under the line, are continually subject to rain, and the ground near the shore is low and covered thick with trees and underwood. The heat being intense, noisome fogs arise, which corrupt the air, and render this country fatal to foreigners. Even in the more elevated and hilly coasts, on the south-west of the island, which, at a distance, exhibits a more favourable situation, the low grounds are covered with impenetrable woods and long grass.

The land of North Island, which lies on this coast near the beginning of the Straights of Sunda, appears, at a distance, finely variegated: but at the place where the wood and water are to be got, it is low and covered with impenetrable mangroves, and infested with a variety of insects. —It is here that most of the East-India ships take in wood for their homeward voyage. A Danish ship, in 1768, anchored at this island, and sent twelve of her people on shore to fill water, where they

they only remained two nights. Every one of them were seized with a fever, of which none recovered: but, although the ship went out to sea, none, except the twelve who slept on shore, were attacked with the complaint.

The improvements which are every day taking place at Bencoolen will soon render that settlement healthy. The residents there having totally relinquished the old town, which was wet and low; and residing at Fort Marlborough, on a drier and more elevated situation, are not so subject to sickness in the rainy months as formerly; and the diseases which appear are of a much milder nature. Upon the whole, the insalubrity of Sumatra seems to be owing to want of culture. In many places the soil is luxuriant; and, in particular on the north-east end, the country is diversified with high grounds, hills, and mountains.

The uncultivated parts of the large island of Borneo is subject to the same intemperature of climate and diseases, as Sumatra: and this too is the case of the Celebes, the Molucca, or Spice Islands.

The Spanish settlement of Manilla, on the island of Luconia, which is the chief
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of all the Philippines, has its unhealthy seasons. The land for many miles round this beautiful city is low. In June and July, the humidity of the air is great, and the heat of the sun is intense, which raises noxious exhalations. In these months, fevers and fluxes are frequent, some years carrying off a great number of the inhabitants. No country, however, in the world is more agreeable during the rest of the year: the climate is temperate; the fields are covered with perpetual verdure; and produce all the varieties of tropical fruits,

SECT.

S E C T III.

CANTON, WAMPOA, and MACAO.

THE whole empire of China is represented to be extremely delightful; the soil rich, the air pure; and the industry of the inhabitants astonishing. As it produces every luxury and necessary of life, it is justly esteemed one of the most fertile countries in the world. As the Chinese prohibit emigration, and seldom or never engage in war, their empire is extremely populous. Every river maintains a proportion of inhabitants adequate to the land; whose families live continually in boats, without having any other place of residence. Their number of people lays them under the necessity of carrying industry to the greatest height; for otherwise their country, fertile as it naturally is, would be insufficient to maintain the inhabitants. Every inch of land is cultivated; no forests, nor woods, nor even a single tree, is suffered to obstruct the labours of the husbandman. Canals are cut out every where

where to water the fields; and marshes are manured for the cultivation of rice. By these means, health and plenty are, in a great measure, the portion of its inhabitants through all the seasons of the year.

The only terrible and fatal diseases to which they seem to be subject are the small-pox, and leprosy, two of the most nauseous distempers which afflict the human race.

But, as it is not my intention to dwell upon the diseases of the natives, a subject to which, perhaps, no European will ever be equal, I shall confine my observations to the port of Canton, the only part in the Chinese empire frequented by Europeans.

The usual station of all European ships in Canton river is at Wampoa, a village, situated about fourteen or sixteen miles below the city of Canton. On one side, the land is low, marshy, and covered with water, forming swamps, fit only for the cultivation of rice. The extent of these swamps are considerable: the tides rise very high and overflow great part of them; but the intersection of the river renders them more pure than they would otherwise be;

be; and consequently the air is much healthier than one could well expect from the unfavourable aspect.

On the opposite side, the French and Danes Islands are formed by the intersection of this large river. The land on Danes Island is high, and affords an excellent prospect of the country around, which consists of a variety of other islands agreeably diversified with rising hills, pleasant verdant valleys, with numbers of fine villages.

The city of Canton is built on a wide extended plain, and is very large and populous. Here the government allow the English, Dutch, French, Danes, and Swedes, separate factories on the banks of the river. The city, though paved, is very wet in rainy weather; and the water makes its way under the factories of the different nations every tide. The houses are built with bricks; the apartments are in general small and not very lofty; and the ground stories are very damp. When the business of the season is over, the supercargoes remove to Macao, a Portuguese island, subject to the Chinese government. The city of Macao is situated on a rising
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ground; the whole island is dry, rocky, and barren; it is, however, plentifully supplied with provisions by the Chinese; and though the air is very sultry, yet it is tolerably healthy.

The heat of the places just mentioned, as well as of all the southern parts of China, is excessive during the summer months, particularly in June, July, and August. In September and October, the weather is still sultry in the day-time, but cold and chilly, with north-easterly winds, at nights. December, January, and February are the cold months; and during this time the vicissitudes of the weather are more quick than in any other part of the world. When the winds are northerly, the weather is cold, and the thermometer at 46° , upon a change of the wind to the south, it is next day up at 60° or 70° . People who reside here are always at a loss, with regard to their cloathing; one day finding a silk coat sufficient, and the next, upon a sudden change of the wind, finding it necessary to wear a flannel waistcoat.

In July and August, the climate is excessively sultry; and the seamen living at Wampoa are subject to dangerous remittent
or

or continued fevers, which are no ways different from the epidemics of other warm climates. In November, these fevers change into regular intermittents, which admit of an easy cure by the bark, and are seldom or never attended with great danger. During the above period fluxes are frequent, and seem to be the most prevailing endemic: and although they are not so fatal here as at Bengal, yet if they be neglected at first, they become frequently dangerous, and always very troublesome; often baffling the power of every medicine, till such time as a change of climate is produced by setting out to sea.

In 1771 when twenty-seven European ships were stationed at Wampoa, these diseases were very universal, and carried off numbers. In November, about a third of our people laboured under double tertians, regular agues, and the dysentery. The same diseases prevailed equally in the other ships; and unless the bark was given early in the fevers, and timely evacuation made in the flux, there was little chance of the patient's recovery. The fever and flux were frequently combined, and often changed into one another. In some cases

which I have seen, where the patients were neglected at first, the diseases proved fatal as early as the sixth day; and in others, where the period was longer, the greatest symptoms of putrefaction appeared.

Upon the whole, the port of Canton, is by no means so healthy as it is generally represented. The comparative degree of health which Europeans enjoy here, has been ascertained from the instances of the supercargoes, which is, however, a very erroneous standard. The generous and regular way in which these gentlemen live, for the most part, exempts them from diseases, and being but few in number, no great mortality can take place amongst them. But seamen, who never observe much regularity in their way of living; who work hard in the day-time; are but badly clothed; and not provided against the damps and cold north-easterly winds at nights, seldom fail to be afflicted with the diseases already mentioned. Even the factors of the different nations, who reside here for any considerable time, experience all the inconveniencies peculiar to every sultry climate: florid health is a stranger to their countenances; their constitutions
are



are soon weakened and enfeebled ; and they become subject to habitual fluxes and other complaints, the usual consequences of too great relaxation.

But from this I would not be understood to infer that China is peculiarly fatal to Europeans; on the contrary, there are many circumstances which render it more salutary than most of the settlements in India. The usual provisions and refreshments to be met with here are much superior to what can be got in any of the ports of India, and are not exceeded even by England itself. The diseases, however, are of the same nature with those of other warm climates ; and when many ships are at this place, they carry off numbers.

C H A P. V.

GENERAL OBSERVATIONS ON THE MANNER, IN
WHICH EUROPEANS LIVE IN THE EAST INDIES.

HAVING given some account of the principal settlements of Europeans in Asia, I shall conclude with some short remarks, on their manner of living, in this part of the world.

Europeans live much in the same way as they do in their own countries; except that they carry luxury to a greater height. At Bengal, and on the coasts of Malabar, and Coromandel, there is plenty of rice, all kinds of tropical fruit, greens, roots and meat, and likewise fish. The poultry is good: the beef is very indifferent; and the seamen, who eat freely of it, are subject to the cholera morbus and diarrhœa.

The common bread, made of wheaten flower is very good, and well fermented. The usual drink is arrack punch. But amongst people of fashion, wine and water, cyder

cyder, and country beer * are the usual diluters of their meals. They are plentifully supplied with preserved fruits, pickles, beer, and porter, from England; and they have in general all varieties of wine. A generous, but moderate use of wine is conducive to health, and is useful in preventing diseases; and it is, indeed, generally observed all over India, that the people whose circumstances enable them to drink claret, enjoy the greatest immunity from sickness. Great errors seem to be committed in drinking too much, and in eating luxurious meals of animal food, served up with pickles, rich sauces, and dressed in such a manner as to encourage too much repletion: for it is remarkable, that in warm climates so long as there is the least remains of health, in consequence of the evacuations being more profuse; and the constitution demanding a greater supply, the appetite is encreased.

Rice

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* Country beer is made by mixing one part Dorchester beer, or porter, with two or more parts of water, to which a little ginger and a sufficient quantity of sugar are added; a very strong fermentation is soon renewed, and in a few hours the beer is very brisk and exceedingly palatable.

Rice, vegetables, and spiceries are the common articles of diet of the natives in all warm climates. In imitation of this, * cory and rice is a standing dish in all European families, which, though complicated, is, perhaps, the most salutary diet: for in this way, a sufficient quantity of animal and vegetable food can be taken with safety, to satisfy the most craving appetite.

After dinner, it is the usual custom to go to bed for some hours. This almost every person thought a salutary practice. It, however, did not agree with my constitution, as it always was succeeded by heaviness and languor.

The men dress lightly, and, when in the house, except upon visits of ceremony, sit in their waistcoats with sleeves. The ladies attire themselves elegantly; but incumber themselves with stays, and decorate their heads as in Europe. The usual vehicle, for carrying people of fashion abroad,

* The principal ingredients of cory are cayenne pepper, ginger, and turmeric. Fowls; prawns; and other fish, are stewed in a proper quantity of this powder, to which a few shallots are added, and the whole agreeably soured with lime-juice. The stew is served up and eat with abundance of rice.

abroad, is a palanquin. In the morning and afternoon they often ride out on horseback. In the cool months, at Calcutta, when I was there, the usual diversion gentlemen engaged in was cricket in the afternoon: but, even at this time, it seemed too violent an exercise for the climate.

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Y. - O. - S. - H.

PART II.
PRACTICAL OBSERVATIONS
ON THE
DISEASES
WHICH PREVAIL IN
LONG VOYAGES TO HOT COUNTRIES,
AND
IN VARIOUS PLACES IN THE EAST INDIES.

PART II

PRACTICAL OBSERVATIONS

ON THE

DISEASES

OF THE

INDIAN NATIONS

IN THE EAST INDIES

BY

J. H. M. D. D.

OF THE

ROYAL SOCIETY

PART II.

PRACTICAL OBSERVATIONS

ON THE

DISEASES

WHICH PREVAIL IN

LONG VOYAGES TO HOT COUNTRIES, &c.

HAVING, in the former part, given a general account of the prevalent diseases in long voyages to hot countries, and in various parts of Asia, I shall in this proceed to arrange them, and afterwards offer practical observations on each disorder.

CHAP.

C H A P. I.

S E C T. I.

GENERAL ARRANGEMENT OF THE DISEASES WHICH
PREVAIL IN LONG VOYAGES TO HOT CLIMATES,
AND IN VARIOUS PLACES IN THE EAST INDIES.

IN arranging the diseases, I shall first consider those, which usually occur at sea; and then enumerate the more fatal epidemics, which prevail on shore, and are affected by land exhalations.

The diseases, to be met with in voyages to the East Indies, are but few in number, and may be properly arranged under the following heads:

1st. Such diseases as are occasioned by heat alone.

2d. Such as are occasioned by heat united with moisture.

3d. Such as are the consequences of cold united with moisture.

The diseases, at sea, arising merely from heat are very inconsiderable. If the voyage be favourable, and no long continued calms take place, the crew in general enjoy

enjoy a good state of health. The common effects, which even immoderate heat has upon the constitution, are, a greater secretion of bile; rarefaction of the fluids; and relaxation of the solids: hence arise loss of appetite, nausea, acceleration of the pulse, and slight fevers, upon first getting into a warm climate. Heat alone, therefore, can only be considered as a remote cause of sickness, which will happen when it is succeeded by a humid, stagnant, atmosphere.

The diseases occasioned at sea, by heat united with moisture, are fevers, or fluxes. These complaints often make their appearance in latitudes near the equator; where the air is moist, wet, and sultry, and where, on account of calms, noxious exhalations arise from the ocean. But if a gentle breeze spring up, the suffocating vapour is dispelled, and the languor, and sickness, which are certain presages of disease, are wonderfully removed; and any trivial ailment which may occur.

The most common, and dangerous epidemic, arising at sea, from cold united with moisture, is the scurvy; which seldom or never appears, in voyages to India,
till

till the ships arrive, in the stormy latitudes, off the Cape of Good Hope. If the weather, however, be tolerably dry, and the passage quick into a more temperate climate, the disease, if it makes its appearance, is not fatal. But on the contrary, if the ships be long detained by unfavourable winds in stormy weather; if large seas continually wash the decks; if the crews be fatigued and wet upon duty; and have no place to retire to, but a dirty birth, and wet hammock, where they must breathe a polluted air; the distemper never fails to rage with malignity. In such a state of the weather, even the officers, who live better, and have changes of dry cloaths, at last become affected, and suffer more or less by the disease.

I come now to consider the most prevalent land diseases in the East Indies, which being influenced by the weather, may be divided with most propriety, into those which appear in the dry, and those which prevail in the wet season.

The diseases of the dry season, are mild fluxes from acrid bile, cholera morbus; bilious cholic; and inflammation and obstruction of the liver.

The

The diseases which prevail in the wet season, are fevers, and dysenteries; which are malignant in proportion to the heat, and humidity of the air; and to the noxious exhalations from marshy, and uncultivated tracts of country.

Thus far having arranged the diseases, as they seem to depend upon the weather, situation, and season, it will appear, that the most destructive complaints, in the East Indies, are fevers, cholera morbus, dry belly-ach, dysentery, and hepatitis; and at sea, the scurvy. These shall be treated off in their proper places.

But as fevers are the most frequent and fatal of all diseases, it remains to consider, in a cursory way, the usual denominations, by which they have been distinguished; and to examine the real difference which obtains amongst the genera into which they have been divided.

S E C T. II.

OF THE DIVISION AND DIFFERENCE OF FEVERS.

FEVERS have been divided into many GENERA, and various appellations have been given to them both by the ancients and moderns, derived from the time of their duration, from some remarkable predominant symptom, from the state of the fluids, and from various other circumstances*. But unfortunately, the many names to be found amongst authors, not only perplex the unexperienced, but answer no real advantage in practice.

After many years careful attention to the symptoms and nature of fevers, as they have occurred in practice, in different climates; and after reading many authors upon the subject, I am thoroughly convinced, that, although many *varieties* happen

* Hence amongst the ancients the names of ephemera; synochus; typhus; lypyria; affodes; caufus; synochus putris; synochus imputris, &c. And amongst the moderns, inflammatory; nervous; putrid; bilious; petechial; miliary; jail; hospital; ship; yellow fevers, &c.

happen according to difference of constitution; season; situation; and climate; yet, in every part of the world, the disease is essentially the same: or, in other words, consists only of one GENUS; and that the only *species* that can be ascertained, are the *intermittent*, *remittent* and *continued*.

In support of this opinion *, the intelligent reader is referred to the consideration of the essential symptoms of these species of fever. The continued fever, he will find, does not differ more from the remittent, than the remittent from the intermittent type; and that their frequent changes into each other, and perhaps again to their original form, prove them to be the same GENUS. Thus the intermittent fever will, in some cases, assume the continued form: the remittent, for several days, will run on with unabated violence; and, often, after the most sensible remissions, terminate again in a continued fever. Thus also, every continued fever has alleviations and exacerbations, and therefore

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* For a more particular account of the reasons in support of fevers being essentially the same, see the author's *Observations on fevers*, &c. published in 1780.

in a strict sense may be considered as a remittent.

Continued fevers have been divided by modern medical authors into three GENERA, the *inflammatory*, *nervous*, and *putrid*: and many Physicians, fond of multiplying names, have subdivided each of these GENERA, into many *species* and varieties.

If we examine these supposed GENERA, they will be found only to express different states of fever. The inflammatory fever, for example, is defined to consist in intense heat, frequent, strong, hard, and full pulse, with high coloured urine. Many fevers, it must be granted, in their incipient state, are attended with these symptoms; which, however, prevail more in the paroxysms of intermittent, and remittent fevers, than in those of the continued type. Even the depressing powers of contagion do not always guard against symptoms of strong action in the arterial system, which, in the beginning, are allowed to attend nervous, putrid, and jail fevers * as they have been termed.

With

* See Gillchrist upon the nervous fever; Pringle on the jail fever, and Huxham on the putrid fever.

With regard to the nervous fever, every symptom which characterizes it, attends remittents in hot climates: and as to the putrid, although in some rare instances the fluids have, in the beginning, appeared in a dissolved state; yet a tendency to putrescency is an effect, and not a cause of fever; and equally attends intermittent, remittent, and continued fevers. There appears great impropriety, therefore, in confining the terms *inflammatory**, *nervous*, and *putrid*, to continued fevers; and still more absurdity in establishing them as distinct GENERA.

In other diseases were we to form distinct GENERA, from the different states of the fluids, and other attendant circumstances, as has been done in continued fevers, we should greatly multiply distempers, which are essentially the same. The small-pox for example, being in some patients attended with strong action of the vessels; in others with symptoms of debility and

K 3 nervous

* The inflammatory fever, I formerly observed, in my treatise on fevers published in 1780, I never had seen as an idiopathic disease. Since that period I have not met with an instance of it: and all authors now allow it to be a rare occurrence.

nervous distrefs; in others with a putrescent state of the fluids; and in many with bilious vomiting; might with equal propriety be divided into distinct GENERA; under the titles of *inflammatory*, *nervous*, *putrid*, and *bilious*: but every Phyfician knows that the diftemper proceeds from the fame specific contagion, and that thefe circumftances, attendant on the fever, exprefs no generic difference.

But fevers are not more, alike in their effential fymptoms, and their tendency to change their forms, than in the caufes which produce them. They are all the offspring of heat and moiſture; of exhalations from corrupted animal or vegetable ſubſtances; of confined air loaded with human effluvia: or they ſometimes proceed from ſome internal degeneration of the habit. They alfo are all apt to become contagious; and therefore a perſon, labouring under fever, has the power of communicating the ſame diftemper to one in health, by morbid effluvia or emanations iſſuing from his body.

This contagious power, inherent in fevers, they however poſſeſs in very different degrees, according to the different modifications

cations of their remote causes. Thus regular intermittents, which derive their origin from the purer marshy exhalations, are only slightly contagious*, whereas re-

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mittents,

* Agues possess the contagious power in so small a degree, that their influence in this respect has been denied by almost all authors. Dr. Cleghorn however, whose judgment and accuracy are indisputable, found them infectious in the island of Minorca. "Tertian fevers of various forms appear among people of all ages, and spreading from one to another, by contagion they continue to increase till about the time of the autumnal equinox, when they rage with the utmost fury amongst persons of all ranks, whether natives or foreigners. These fevers have as good a right to be called contagious as the measles, small-pox, or any other disease; for although in that season, there is certainly a peculiar disposition in the air, to affect numbers in the same way; yet these, who are much conversant amongst the sick, are most liable to catch the distemper." *Observ. on the epidemical diseases of Minorca*. Third edition, page 132.

So far as my own observations go, I must subscribe to Dr. Cleghorn's opinion. I have frequently seen agues appear, when there was no reason to impute the cause to marshy effluvia; but merely to contagion. The following are a few of the many instances, which might be adduced in support of this opinion. Several years ago I attended a lady in a palsy, who lived in a town, where no ague prevailed, and was confined to a three pair of stairs room; yet, nevertheless, she took a tertian, where no occasional cause could be imputed except contagion.

A few years after, a gentleman ill of the palsy, as also his servant maid, were attacked with intermittents, and no other cause

mittents, originating from corrupted exhalations after hot summers, or in warm climates *, are very contagious ; and from this

cause could be assigned, except the visit of another maid servant, who lived in the country, and was ill of an ague.

A person ill of an ague visited a child, in a high and dry situation ; and when the feverish state began to subside, had much intercourse with it. The child in a few days took the disease.

An adult person whose habits, and manner of life, made him by no means subject to an intermittent, called upon a friend who was sweating profusely in the paroxysm of a tertian. The effluvia arising from the patient's body, he said, he received by inspiration ; the scent, of which he never afterwards could get rid of. In a few days he was seized with an intermittent, with severe quotidian paroxysms, attended with delirium, and great irritability of stomach. In the third paroxysm I visited him ; and he then appeared to be in so great danger, that every measure was instantly made use of to break the force of the next fit ; which succeeded ; but he continued for some weeks extremely weak.

Since I was elected physician to the Newcastle Infirmary, in May, 1788, I have had six instances of agues, being communicated from one person to another by contagion. And the same thing has happened to some of the other medical gentlemen in the hospital. The infirmary is situated in a dry, airy, situation ; and agues have not been known to happen in the house ; except when other patients have been admitted labouring under the disease. In the cases I have alluded to, the persons infected with the ague, were in the high wards ; and lay in beds, contiguous to patients who communicated the distemper.

* The remittent fever, which proved so destructive to the imperial army in Hungary, spread by contagion ; became exceed-

this cause often assume a continued form: and when this happens, these remittents differ in no respect from that variety of
con-

exceedingly mortal, and was propagated over Germany, and great part of Europe. See *Sennertus and Ruland de Morbo Hungarico*.

But to apply more particularly to the object of this treatise, a single doubt cannot be entertained of the infectious nature of the Johanna and Mohilla fever, and of that which proved so fatal to Captain Cook's ship, and the Grenville East Indiaman [see page 123]. To these, I shall only add a short account of the contagious fever of Senegal, in 1778.

The remittent fever, there, generally happens during the rainy season: but when the rains are heavy and overflow the island, the fever assumes a malignant continued form. Dr. Schotte, a German physician, supposes the contagion was brought from Goree, a French garrison, by some black messengers; but this does not seem to be clearly ascertained. The distemper, however, appeared in a soldier on the fourth of August, who died on the third day of the fever. The orderly man of the hospital was seized on the sixth with the same disease, and died on the ninth of August. One of the venereal patients, who still remained at the hospital, was taken ill of the same fever, and died in a few days. Some of the soldiers in the fort having access to the hospital, to visit their sick comrades, took the contagion, and spread it through the whole garrison.

Out of the number of ninety-two white people who were on the island, when it broke out, only thirty-three were left, when the French invested it, on the 28th of January 1779; and eight of these were hardly able to walk. Three of the latter died on their passage to France, as prisoners of war; and in two more of them, the probable fatality of lingering fluxes, in which the disease terminated, was anticipated by their being
drowned

continued fever, which is propagated in camps ; jails ; hospitals ; ships ; and in the confined habitations of the poor.

With regard to continued fevers, whether they at first appear in their own proper form, or degenerate from the remittent type, I am convinced that when they become prevalent, in any town ; village ; or even in a single family ; they are always contagious ; and if precautions are not used they spread and become general, from being possessed of this baneful influence.

Their

drowned on the bar of Senegal, from the over-setting of the boat which conveyed them. The symptoms, attending the disease, were so horrid and dreadful, that it seemed almost impossible that any one could have a chance of recovering, and so very contagious, that it spread over the island with amazing rapidity. Most patients died on the fourth or fifth day, a few were carried off suddenly, and some others, not before the sixth or seventh day. Those who survived the seventh day, either recovered, or fell into lingering dysenteries, attended with obstructions of the liver, which sometimes terminated in suppuration, and of which death was sooner or later the consequence. A constant and uninterrupted fever, attended the disease, from the beginning to the end in all of them who died ; and in some who recovered no *pyrexia* took place before the seventh day, or later.

The most distinguishing symptoms which attended this fever, in the beginning, were nausea and sickness at stomach, great head-ach, pain in the back, vomiting of bile ; and sometimes great quantities of black matter resembling coffee grounds.

The

Their constant appearance in the dirty habitations of the poor; and the total immunity of people who live well, and observe cleanliness, except, when falling in with accidental contagion, are the strongest proofs that they originate from, and are propagated by infection. For eighteen years past, I have attended minutely to the rise, and progress of fevers in Newcastle and its vicinity; and, where I have been concerned, have been able to trace the infection in most cases. For this purpose I have, for some years past, had a register

The eyes were red and shining, and seemed to project from their orbits. As the disease advanced a delirium was added, the patients complained of burning heat at the stomach, attended with sickness and unquenchable thirst. A putrid diarrhoea came on; slight hemorrhages made their appearance; to which were added petechiæ; and vibices appeared a few minutes before death.

The author gives this fever the name of *synochus atrabiliosa*: but it appears to be precisely a remittent fever of a malignant nature; and indeed he confesses, that it only differs in the beginning, from the fever which is called *bilious*, or from that which goes by the name of *yellow*, by the severity of its symptoms. The name of *synochus* here, it is to be feared, influenced the practice, as it always supposes the propriety of bleeding in the beginning. See Schotte on the *synochus atrabiliosa*, a contagious fever which raged at Senegal in 1778, and proved fatal to the greatest part of the Europeans, and to a number of the natives.

register kept, at the Newcastle Dispensary, upon a plan similar to that used by my ingenious friend Dr. Haygarth, of Chester, for tracing the progress of variolous infection: and as it may be useful for those who will give themselves the trouble of making observations on febrile infection, especially in large towns, a specimen of the register will be annexed to this volume.

C H A P. II.

OBSERVATIONS ON FEVERS.

HAVING made some remarks on the division and difference of fevers, I shall now proceed to offer practical observations on them. But the remittent being the most frequent form in hot climates, I shall treat of it more fully, and confine my remarks on fevers of the continued and intermittent type within a very narrow compass.

S E C T. I.

OF THE REMITTENT FEVER.

THE remittent fever may occur at any time in hot climates, but seldom rages epidemically, unless in close, moist, and sultry weather. In treating of this disease, I shall first give a history of its symptoms, as it appears at sea, when it is not affected by exhalations from the land,

The

The fever generally attacks with lassitude, rigors, sometimes only with a chilness, pains of the back and bones. These symptoms are succeeded by sickness at stomach, great heat, thirst, and pains above the eye-brows. The pulse, though soft, becomes very quick and full; the countenance is flushed; the head aches violently; the patient is troubled with great restlessness, anxiety, and oppression; and in the height of the paroxysm vomits abundance of bile. The crisis of the fit is generally by sweat; and the patient enjoys a short lucid interval, during which the pulse seldom returns to its natural state; and almost all complain of a bitter taste in the mouth, giddiness, head-ach, and prostration of strength. In a few hours, the feverish accession returns, which is only known by an aggravation of all the symptoms; and is carried off by a sweat, as the former paroxysm; or sometimes by an evacuation of bile.

If the disease be neglected, the remissions grow more indistinct; and, sooner or later, it acquires a continued form, accompanied with many of the following symptoms: the tongue, which before was
only

only white and furred, becomes dry and black; the teeth and lips are covered with a tenacious slime; and sometimes aphthæ appear in the mouth, and throat. The heat, head-ach, and inquietude are greater; the eyes either become dull and heavy, or wild and staring; and the patient falls into a coma, or delirium, attended with tremors and twitching of the tendons. As the strength sinks, the pulse becomes very small and fluttering, and the heat of the skin is changed into a cold clammy moisture. If there have been no symptoms of putrefaction before this, they often now appear: these symptoms, however, do not always take place; for I have seen the patient carried off without any evident marks of dissolution in the blood, even when the disease has continued several weeks.

Sometimes, instead of the paroxysms already mentioned, the patient, at first, was only indisposed with giddiness, head-ach, and low spirits: and, although still able to go about, was always worse at night. When the attack was in this form, I have generally observed the fever in its course to be attended with greater danger; less
distinct

distinct remissions; and more evident symptoms of putrefaction.

These are the common characteristic symptoms of the fever, both at sea and in favourable land situations. But in low, woody, and unperforated countries; where, besides intense heat, there is likewise great moisture, and more especially if there be noxious effluvia from marshes, or stagnant waters, the disease is more rapid, universal and fatal. As an instance of the most malignant fever which I have ever seen in any part of the East Indies, I shall here give a description of the marsh fever which raged at Bengal in the year 1768.

This fever attacked in various ways; but commonly began with rigors; pain and sickness at stomach; vomiting; head-ach; oppression on the præcordia; and great dejection of spirits. Sometimes, without any previous indisposition, the patients fell down in a deliquium; during the continuance of which the countenance was very pale, and gloomy. As they began to recover from the fit, they expressed the pain they suffered by applying their hands to the stomach, or head: and, after vomiting a considerable quantity of bile, they
soon

soon returned to their senses. Sometimes the attack was so sudden, and attended with such excruciating pain at the stomach, and so great a degree of timidity and faintness, that I have been obliged to give an opiate immediately.

In whatever form the disease appeared at first, the pulse was small, feeble, and quick; the pain of the stomach increased; and the vomiting continued. As the paroxysm advanced, the countenance became flushed, and the pulse very quick and full. The eyes were red, the tongue furred, the thirst intense, and the head-ach exceedingly violent. A continuance of these symptoms soon brought on a delirium, in which the patients were very unmanageable; but a profuse sweat breaking out in twelve or thirteen hours generally mitigated all the symptoms.

In the remissions, the pulse, which before was frequently 130, fell to 90: the patient returned to his senses; but complained of great debility; sickness at the stomach; and a bitter taste in the mouth. This interval, which was very short, was succeeded by another paroxysm, in which all the former symptoms were much aggravated,

gravated, particularly the thirst; delirium; pain at the stomach; and vomiting of bile. The breath and sweats, even so early as this, sometimes began to be offensive.

If the disease was neglected, in the beginning, the remissions now totally disappeared; and the skin became moist and clammy. The pulse was small, and irregular; the tongue black, and crusted; and the pain at the stomach, and vomiting of bile, became more violent.

When matters arrived to this pass, all the excretions, but especially the stools, were very offensive, and ran off involuntarily: and the patients now, instead of being highly delirious, laboured under a coma, with interrupted ravings. Convulsive twitching of the tendons, tremors, and hiccup were added: the extremities grew cold and were covered with livid vibices; and the body, for several hours before death, very frequently emitted a cadaverous smell.

The appearance of the urine, in fevers of warm climates, is not much to be depended upon. In the beginning of the paroxysm, it is pale; at the height, of a higher

higher colour; but seldom or never deposits any sediment.

If the fever was neglected at first, it generally proved fatal betwixt the third* and seventh days. In some cases, indeed, where the exacerbations were not severe, it was protracted to the fifteenth, and sometimes to the twentieth day. But consequential diseases of the liver, terminating in suppuration, and the dysentery, attacking patients in the convalescent state, proved more fatal than the original disease,

CAUSES OF THE REMITTENT FEVER,

MOIST air after long continued heat, and exhalations from marshes, or damp grounds, are the most common remote causes of the remittent fever. But besides these I shall mention some others which

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* I was informed by a surgeon, who resided at Calcutta, that there were many instances of patients being carried off highly delirious in the first fit; but that he still lost more in the third paroxysm. His practice was to exhibit an emetic at first; and afterwards to endeavour to bring the fever to remit, by antimonials, and saline draughts. Here, the danger, in the first paroxysm, seems to have been too great to admit of a cure by the most powerful medicines; but the fatality, in the third, might certainly have been obviated by an early exhibition of the bark,

predisposed to the disease, and seemed to have a powerful effect in rendering it more dangerous. These are principally too great inanition; too great repletion from a diet of animal food; fatigue in the heat of the sun; and the dejecting passions of the mind.

The three first predisposing causes are so evident, that none can doubt their powerful influence: nor did it escape the eyes of the most common observers at Bengal, that those who had been much reduced by evacuations, particularly by the use of mercury, great eaters of animal food, and those who exhausted themselves by fatigue in the heat of the sun, were most liable to fevers; and, when attacked, had the worst chance of recovery.

But of all the predisposing causes none seemed so powerful as the debilitating passions of the mind, such as disappointment, grief, and fear. It is owing to this circumstance, that fevers and fluxes are so very fatal to young adventurers, who annually emigrate in expectation of acquiring riches. Upon their arrival, finding all their delusive hopes suddenly dissipated, they become low spirited; take the infection; and

and are carried off in an instant; whilst others as little inured to the climate, and exposed to the same remote causes of disease, but who have better prospects, either escape the sickness, or when attacked have it in a less malignant form.

But of all the debilitating passions, none is attended with so powerful, and so sudden an influence as fear: for I have observed, that when a dangerous fever has been prevalent, that an alarm has often occasioned almost an instant attack, when the person has been exposed to the remote cause of the disease. And it is perhaps easier upon this, than on any other principle, to account for the sudden deaths, which frequently happened to some who attended the funeral of a deceased friend at Bengal: for if the sickness, as some have imagined, had been merely occasioned by exhalations from the marshy burial grounds, or putrid *miasmata* from the adjoining graves, the grave-diggers would have been more subject to an attack than the attendants on the funeral. This, however, was not the case; for it generally happened that the timorous and humane suffered, whilst the hard hearted and callous escaped.

Although the remittent fever, at first, seems only to be produced by moist air, or exhalations from marshy grounds, yet there is no doubt that the disease is afterwards often propagated by contagion. This was very evident in the fever of Bengal. At first only two or three of our people were attacked, who had worked hard in the heat of the sun: But in a fortnight the fever and flux became so general that few were capable of doing duty. Nor did any escape altogether, except the officers, and quarter-masters, who had no communication with the sick, and the cooks who worked in the galley amongst the smoke.

Whilst this was the case on board the *Talbot*, the *Dutton* was burying her people every day: and, at the same time, the *Queen* and *Salisbury*, other two of the company's ships, although at no great distance, and anchored nearer the shore, enjoyed almost a total immunity from sickness. Another circumstance, which plainly evinced the influence of contagion, was the great mortality amongst the visitors, and attendants on the sick. Nor was the fever less infectious at Calcutta, where the patients lay in large rooms: for merely from being,
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for a short time, employed about the sick, I often experienced all the symptoms of an attack, and was seized with the fever, although I used some means of prevention.

Having taken notice of the principal remote and predisposing causes of the remittent fever, it may be expected that I should advance something relative to the proximate cause; and attempt to explain how the various symptoms are produced. But here I confess my total ignorance. Were I, however, to risk an opinion, with respect to the proximate cause of fever in general, I would say that it neither depends upon obstruction, lentor, bile, spasm, or any other partial cause: but that the contagion of fever, whether arising from marsh exhalations, human effluvia, or any other source, is a poison, which, when received into the system, produces all the symptoms that follow; in the same manner, as the contagion of small-pox or measles produces their respective febrile states. I would also farther add, that this poison, in proportion to its degree of virulence, or the difference of constitution to resist it, more or less exhausts the vital powers, and that it occasions death, some-

times by inducing debility, and sometimes a corruption of the fluids, but still more especially by occasioning congestion, or *engorgement* of the organs essentially necessary to life*.

OBSERVATIONS ON PARTICULAR REMEDIES USED IN FEVERS.

BEFORE I proceed to the method of cure, I shall offer some observations on particular medicines which I have used in this,

* For many years past I have attended to the causes of death in fevers, and can, with confidence, affirm, except in some rare cases, where the powers of life seemed to be overwhelmed at once, I have seen few or none die of mere debility, or of putrescency alone. By proper treatment these causes of death may be always obviated. But determinations to the viscera are the most frequent causes of death in fevers; either from some local weakness having previously subsisted, on which the force of the fever falls; or the virulence of the contagion being of so debilitating a nature, as to occasion an unequal distribution of the blood, to those organs where the vessels are peculiarly delicate, or the circulation languid. Hence congestion in the brain, in the lungs, and abdominal viscera. Authors of great eminence alledge that such determinations depend upon the *phlogistic diathesis*; but when I find pleurisy and rheumatism are never attended with local determination to the head, unless great debility be brought on, I can by no means subscribe to their opinion. Original fevers, indeed, attended with strong action of the vessels, are always the safest; and, unless debilitating plans of cure be carried too far, seldom terminate unfavourably.

this, as well as in other forms of fever, appretiating their merit, and the dependence which should be placed upon them by experience alone.

VENESECTION. This evacuation has been recommended almost universally by Physicians, to remove fulness of the vessels, to reduce the fever, and to bring it to regular remissions. In some cases, where the constitution is vigorous, and the infection mild, perhaps taking away some blood in the beginning of fevers, may not be attended with much danger. I have too much respect, indeed, for several eminent authors, after making all proper allowances for their theoretic ideas of the danger from the *phlogistic diathesis*, to believe they would so strongly enjoin bleeding had they not often found it advantageous, at least harmless. Guided by such authorities, in the beginning of my practice, I was frequently induced to try the effects of bleeding. In fevers which occurred upon first entering into hot climates it seemed to do no harm, as they were generally of so mild a nature as to require little more to remove them than cleansing the bowels, and keeping up a moderate perspiration.

But

But, after a short continuance of hot weather, even although bleeding seemed to be indicated by great heat, thirst, head-ach, and oppressed pulse, I seldom or never saw it answer any good purpose.

Encouraged by the similitude of the Bengal fever and that of the marshes described by Sir John Pringle, without paying any regard to the difference of climate, I thought the violence of the fever required at least one bleeding: and finding the same evacuation recommended by Dr. Huck and Dr. Cleghorn, I was induced to open a vein during the first paroxysm in three of our patients at Culpee. The consequence was, the first did not bear the evacuation; his pulse flagged; and he was very delirious in the ensuing fit; the remissions became very obscure; and the exacerbations were only to be known by his delirium. The other two were seized very suddenly, and fell down in a deliquium; on opening a vein, they returned to their senses; but, before five or six ounces of blood were taken away, they became faint; and the feverish paroxysm ran higher than in those who did not suffer the evacuation. For the future, I was determined

terminated to be very cautious in blood-letting; and, therefore, laid it aside in every fever in warm climates, both at sea and on shore, unless accompanied with topical inflammation.

Since that period, even in the fevers which have occurred at Newcastle, I have not had occasion to prescribe bleeding, above three times, in genuine ideopathic fever; and am certain I never lost a patient from omitting this evacuation.

ANTIMONIALS. Various preparations of this mineral I have tried, but prefer emetic tartar* to all others; carefully avoiding every addition which might decompose its acid. It was at first dissolved in pure boiling water; but finding a powder more convenient for common use, it was afterwards rubbed with eleven parts of sugar to make it more divisible. This preparation, though ever so carefully corked, after keeping, became moist, and crusted: the sugar was, therefore, changed for the same quantity of magnesia†, nor was the antimonial in the least

* Antimonium tartarifatum, Ph. Lond.

† See Formulæ Medicamentorum, No 1, in the appendix.

least robbed of any of its virtues by this addition. However, if, after exhibiting a few dozes of this powder, its operation does not proceed to our wish, drinking acidulated liquors not only renders this, but every other antimonial preparation more active.

James's Powder, from what I have observed, is a more uncertain antimonial than emetic tartar in the fevers of hot climates, frequently lying inert in the stomach and bowels for some hours, and afterwards operating with great violence. Being convinced of its inferiority to emetic tartar, I have not for many years made any trial of it. From a spirit of quackery, however, it is still sent out with directions to hot climates. When in proper hands I shall not presume to say, that it is an useless, or hurtful medicine; but when given indiscriminately, and continued for any length of time, I am certain this popular remedy has too often proved fatal.

Antimonials are, by some, supposed to possess a powerful febrifuge virtue, as a remission of fever often ensues after their use. This seems to be effected in the following manner: during their operation,

a kind of artificial paroxysm is raised; which at last is carried off by a sweat, although the fever still may continue, and in a few hours be as much exasperated as ever. Their virtues, therefore, in carrying off fevers in their incipient state, seem to depend principally, if not altogether, upon their evacuating powers; just in the same manner, as may be effected by any other emetic, and laxative. But, when once the fever is confirmed, antimonials are possessed of no virtues either remove it, or to bring it to more regular remissions. And, when the disease has arrived to any degree of malignity, such debilitating medicines are extremely hurtful.

REFRIGERANTS. The saline draughts of Riverius are generally prescribed, with a view to dilute the bile, to cause a perspiration, and to bring the fever to more regular remissions; but, as most fevers have this last disposition, what, is merely the nature of the disease, has been imputed to the effects of the medicine. When given in an effervescent state, they will sometimes stay a vomiting, and remove an urgent symptom; but, when exhibited alone, the highest character which can be given of them

them is, that they are very inoffensive, but possessed of no virtues, either to cure a fever, or to bring it to more regular remissions. The other remedies, which have been tried with the same intention, are *spiritus mindereri* and nitre. Whole pints of the first have been given, without producing any sensible effect; and as for nitre, if the fevers of warm climates demand the use of it, the stomach of the patient will not bear it in sufficient doses to answer any good purpose; and, indeed, the prescribing of such remedies can only be accounted a specious pretext for doing something. When no other remedies are necessary, they are much surpassed by lemonade; and barley, or rice-water acidulated; the usual drinks and diluents of the patient.

ALEXIPHARMICKS. Amongst this class of medicines, I have tried camphor, snake root, musk, castor, salt of amber, salt of hartshorn, and the powder of contrayerva. The first was commonly prescribed, in the form of the *camphorated julep* of the London Dispensatory, with a view to cause a perspiration; to relieve the head; or to abate some urgent
symp-

symptoms; but very seldom with any remarkable success. In whatever way camphor is prescribed, it is a very nauseous medicine, and, in hot climates, will never sit, in sufficient doses, upon the patient's stomach. The snake root was most commonly given in the form of decoction, with a little opium; it seemed to answer better than most medicines of this class; and, was attended with considerable advantage, in the decline of fevers, when accompanied with a profuse diarrhoea: however, the same intentions may be answered by much more agreeable medicines: for this reason, even at first, I never put much stress upon it, and, in my later practice, laid it entirely aside. I do not recollect a single instance of the good effects of any of the rest, except musk and the salt of hartshorn. The first, if genuine, given to the quantity of a scruple every four hours, often abates hiccup, and other nervous symptoms; and it likewise acts as a powerful cordial and diaphoretic. The latter was only prescribed in low cases as a stimulant; and, therefore, was never long continued. In short, little dependence is to be put upon most medicines of this class.

class. If they are prescribed with a view to relieve the head, they are much surpassed by blisters; wine answers the purpose much better as a cordial; and warm fomentations, or *pediluvia*, as antispasmodics, and diaphoretics.

OPIUM. This medicine, though possessed of no power to shorten the duration of fevers, often produces the most wonderful relief. For above twenty three years I have given it freely, though with caution in fevers, and even in many cases of inflammation, without being biased by any theoretical opinion concerning its mode of operation. If upon trial it was found to mitigate the suffering of patients under the agony of pain; to raise the drooping spirits of the dejected; and to procure quiet and refreshing sleep; I have always persisted in its use, regardless whether its good effects depended upon its being a sedative or stimulant. The vain endeavours of Physicians, indeed, to account for the mode of the operation of medicines, are not more conspicuous in any other article, than in opium; and hypothetical reasoning on this subject has very much limited the use of this powerful medicine,

medicine, intended by providence to sooth the miseries of the afflicted.

In the paroxysms of intermittent and remittent fevers, and in the nocturnal exacerbations of those which are continual, I have almost invariably found opium, to procure an alleviation, by taking off inquietude, inducing sleep, and by bringing on perspiration. In fevers of the low kind, attended with dejection and despondency, opium, by infusing pleasureable sensations, and by procuring sleep, if early given, very generally prevents delirium: And when spasmodic affections become troublesome, such as convulsive twitchings of the tendons, frequent hiccup, and constant inquietude, it is the only medicine to be relied upon: but its good effects here, in my opinion, depend upon its narcotic powers; for unless it induces sleep, the relief is always transient, and often very trivial. At the same time, however, I must observe, that, in some constitutions, opium, even when most strongly indicated, often disagrees; and, instead of procuring rest, occasions inquietude, starting, and next day intollerable head-ach.

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But in no condition of fever is opium of more advantage, than in removing pain and irritability of stomach; and in assisting this organ to bear the bark. In the Bengal fever, on account of the violent pain and vomiting, which ushered in the disease, I was frequently obliged to commence with opium; and in the irritability of the stomach, which is often as severe in remittent, and some cases of continued fever in this country, I have found the same medicine equally necessary and efficacious; especially when combined with the following article.

CALOMEL. This preparation of mercury is of very extensive use in mitigating some of the severe symptoms attending fever. In great irritability of the stomach, attended with vomiting of bile; it is an indispensable addition to opium; and when thus combined, at the same time that the convulsive motion of vomiting is allayed, bilious redundances are carried off by stool. But its good effects are not confined merely to its evacuating power, for I am certain that calomel is well calculated to prevent determination to the abdominal viscera, which

which is so frequent a cause of death* in the remittent fever.

Impressed with the common opinion, that mercury dissolved the blood; and finding it to have constantly an ill effect, when given for any urgent symptom, in such patients as had the *scorbutic diathesis*, I seldom exhibited it in the remittent fever of Bengal, in which I supposed there was a great tendency to putrefaction. But having, since that period, given calomel freely in the dysentery, as also in remittent fevers, attended with great irritability of the stomach, I am now convinced that mercury is possessed of no septic principle, and that it is one of the best medicines to open the bowels, and to prevent inflammation and corruption in the abdominal viscera. But, at the same time,

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* In the remittent fever of Minorca, Dr Cleghorn found the intestines of those who died partly mortified and partly inflamed. Bartholine also found the stomach and duodenum mortified and inflamed in those who died of the epidemic fever of Copenhagen, in the year 1652. And no person can visit patients under remittent fevers, especially in hot climates, but must be convinced, from the burning heat, and the constant pain and vomiting, that some degree of inflammation in the stomach, duodenum, and liver, often appears early in the disease, which if not speedily removed, too frequently proves fatal.

I should never think of prescribing mercury, when actual symptoms of putrefaction have taken place in fevers; such as hemorrhages, *petechiæ*, or purple spots; for, in such a state of the fluids, mercury must be as hurtful, as it has been experienced in the real sea scurvy.

CURE OF THE REMITTENT FEVER.

HAVING made some observations on particular medicines, I shall now proceed to lay down the method of cure, which, in the course of my practice, I have found most effectual in the remittent fever.

Nothing is more indispensably necessary, in the beginning of this fever, than to cleanse the intestinal tube by gentle vomits and purges. Nature seems always to indicate such evacuations by the plentiful secretion of bile, which, if not speedily discharged, often brings on an inflammation of the stomach; nausea; and hiccup; preventing, in the course of the disease, the effects of the most powerful medicines.

When the fever attacked slowly, or when I was called in the remissions, I found

found it the best course to give a vomit of ipecacuanha, with one or two grains of emetic tartar. If this did not move the bowels, next day a dose of neutral purging salts was prescribed.

But, in dangerous fevers which rage epidemically, no time is to be lost; therefore this method of evacuation is too tedious. In such cases, I have generally trusted to emetic tartar, given to the quantity of a quarter or half a grain every hour, or oftener, till it acted by vomit and stool; which last intention is rendered more certain by the addition of manna, decoction of tamarinds, a small portion of cathartic salt*; or a few grains of calomel. Any of these preparations ought to be given immediately after the invasion, as they not only mitigate the feverish paroxysm, but bring it to a quicker solution. But it is proper to observe, that evacuations of this kind are not to be long continued; for it will be in vain to expect by these means to prevent a generation of bile; for so long as the feverish indisposition continues, although an emetic and cathartic

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were

* Natron Vitriolatum. Ph. Lond.

were repeated every day, more bile will still be secreted; but as soon as the fever, which is the cause, is removed, the effect of consequence will cease.

Sometimes, instead of commencing with these evacuations, I found it necessary, to relieve the pain of the stomach, to give one grain of opium immediately on the attack of the fever; to apply fomentations to the region of the stomach; and to open the bowels by clysters. When the pain and vomiting were, by these means, removed, after an interval of two hours, I had recourse to emetic tartar, with the additions already mentioned. But, in some, the symptoms of inflammation in the stomach ran so high, that I was deterred from giving any thing more powerfully emetic than chamomile tea: and therefore was contented with mitigating the pain and vomiting with opium; and afterwards opening the bowels with the purging decoction. N^o. 5.

Since that period, I have had much experience of the superior efficacy of calomel, conjoined with opium, in taking off irritability of stomach; and in opening the bowels: and, therefore, in all dangerous

ous remittent fevers, attended with vomiting, burning heat, and pain at the stomach, I would recommend the use of the pills, N^o. 4. Two ought to be taken immediately for a dose, and one to be repeated every half hour, till the pain abates. After this their operation should be assisted by clysters, fomentations, and, in very urgent cases, by the use of the warm bath. And when the irritability of the stomach is, by these means, removed, all bilious and corrupted humours should be carried off by the purgatives, N^o. 5, or 6, given by spoonfuls, and repeated frequently*.

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* The yellow fever of the West Indies, and that of Senegal, (page 153) have been represented to be almost totally beyond the power of medicine. But I have little doubt, that the fatality of the worst kind of fever may be obviated by a practice similar to that above mentioned. In the yellow fever, as it has been called, I would recommend, after the bowels are unloaded by a purgative clyster, that at least one hundred drops of tincture of opium be given in three or four ounces of any emollient decoction, by way of clyster; and that the patient be immediately put into a warm bath: that, when he is removed to his bed, eight or ten grains of calomel be given in the form of pills, with opium, if the anodyne clyster have not totally removed the vomiting; and that the operation of these pills be hurried by the exhibition of more purgative clysters; and that, as soon as the bowels are opened, no time be lost in throwing in the bark in the most liberal manner.

As soon as the intestinal canal has been thoroughly cleansed, the cure must entirely depend upon giving the peruvian bark, in as large doses as the patient's stomach will bear, without paying any regard to the remissions or exacerbations of fever. If the remissions be distinct, the bark, indeed, will have a more speedy effect in subduing the fever; but even if it become continual, by a regular and steady perseverance in the medicine, it will be effectually prevented from growing dangerous or malignant.

If, after evacuations, the stomach remain weak and squeamish, it is of the utmost importance to prescribe a full dose of opium. I seldom found it fail to remove irritability; and then the bark sat well on almost every stomach. On the contrary, if the disease was allowed to go on, or if time was wasted in watching for remissions, the disorder of the stomach increased, and other dangerous symptoms supervened, which often rendered the effects of the bark precarious.

When the stomach is weak, the bark ought to be given liberally in infusion or decoction; which are rendered much more effectual,

effectual, by the addition of the South American Extract*. But as soon as the patient can digest the powder, immediate recourse should be had to it, in a saline draught; port wine; or when the patient has a great aversion to the powder, its taste may be easily covered, by making it into a draught, with a small proportion of brandy, and three or four table spoonfuls of almond or cow's milk sweetened with sugar. This draught should be taken, as soon as mixed, before the bark impart any of its bitter taste to the vehicle.

The most certain effects of the bark, if given early, are a gentle equable sweat, and often a loose stool. If it does not produce the last effect, especially if the symptoms indicate bilious redundances, laxatives, such as calomel, rhubarb, or clysters, may be occasionally exhibited. But if it run off by stool, it will be indispensably necessary to check this evacuation, by a few drops of tincture of opium, given in each dose.

If, during the course of the fever, local affections of the bowels take place, such as slight inflammation, or obstruction of the

* See Formulæ. No. 7. 8. 9. 10. 11.

the liver; or a dysenteric state of the intestines; besides blistering, much advantage will arise from the judicious combination of calomel with opium, as an auxiliary to the bark. And I, now, am persuaded, that owing to the fears I had of mercury being capable of inducing some putrefaction in the humours, I lost some patients of suppuration in the liver, the consequence of the Bengal fever and dysentery; when a fatal determination might have, in all probability, been obviated by an early use of mercury. Were I, therefore, to treat such cases again, I should give two or more grains of calomel at bed-time, occasionally with opium, and continue it, along with the bark, till such time as every symptom of danger disappeared.

Although the many frivolous arguments, which long prevailed against the use of the bark, are now obviated by the united consent of the ablest Physicians, yet there still remains one fatal prejudice, which prevents its more general exhibition. When a fever has distinct remissions, few Physicians will scruple to prescribe it; but, if the disease assume a continued form, every

every method is tried to bring on regular remissions ; if this cannot be accomplished, and the patient's strength begins to sink, alexipharmicks, blisters, and cordials are employed to support him. The use of the bark, at that time, would be thought highly dangerous, and has therefore been cautiously prohibited by almost every medical writer since the days of Sydenham. But experience affords sufficient proof, that this objection has no manner of foundation, and that the bark may not only be given with the greatest safety, both in the remissions and exacerbations, but even when the disease is continual.

The diet of the sick ought to be of the most antiseptic kind. Ripe fruit answers very well both the intention of food and medicine. The panado, sago, and other diet on board of ship should be acidulated ; or the drink may be rendered agreeably tart by crystals of tartar or elixir of vitriol. If the patient's strength begins to sink, he should be freely supported with wine in his drink, food, and medicines : his linen should be frequently changed, and his apartment kept as cool and clean as possible. When he longs for cold water,
which

which is frequently the case, it may be allowed him freely, as it will be found the best diluent. Nothing, indeed, in acute diseases, can be more cruel than to refuse a patient the gratification of his strong cravings. Very happy effects often follow from indulging them; and if what is longed for be very improper, there will never be so much of it taken as to do any harm. On board of ship, porter, punch, cheese, and ham, are most frequently desired by the sick in fevers; and however improper they may appear, I have often seen an allowance of them produce the best effects.

CASES OF THE REMITTENT FEVER.

HAVING given a description of the remittent fever, made some observations on particular remedies, and laid down the principal indications of cure, I shall, now, illustrate the whole by the following cases, which are selected from a number faithfully minuted on the spot, and are related nearly in the order they came under observation.

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In the treatment it will appear, that little regard has been paid to private opinions or public systems; uninfluenced by any theory, however plausible and ingenious, it was my constant aim carefully to observe the symptoms of disease, and the effects which medicine produced.

Before I proceed to the narration of particular cases, it is also proper to premise, that the bark which was used, being selected in England, was then of a very superior quality to what can be at present procured. Owing to this drug either being of an inferior quality, or more probably to the wicked practice of adulteration both in America, and in this country; for some years past I have found it necessary, even in agues, to double the quantity: And therefore must recommend the necessity of giving the bark in powder, in the dangerous fevers of hot climates, at least from one to two drams for a single dose.

C A S E I.

May 8th, 1768, lat. 13 deg. 29 min. S.

STEPHEN LEVEN, one of the company's recruits, complained of head-ach, pain
and

and sickness at stomach. His countenance was flushed, his skin very hot, and his pulse quick and soft. Five grains of the antimonial powder, N^o. 1, were given every hour, with plentiful dilution, which discharged much bile, and sweated him profusely; he was, however, very restless during the night.

9th. In the morning, his tongue was dry and parched, his skin hot, and his head-ach more violent. As he was costive, he had a dose of salts, which purged him thrice. At night his fever still continued. One quarter of the antimonial powder was prescribed.

10th. In the morning, his tongue was more foul, he was troubled with great inquietude, and his pulse beat 108 in a minute. The powder was continued every three or four hours, with two spoonfuls of the Mindereri julep; his medicines sweated him, and at night he appeared to be easier, but soon became delirious.

In the morning of the 11th, his pulse beat 100, his tongue was covered with a brown dry crust, his countenance livid, and his skin very hot. His medicines were repeated every six hours, and a little white

white wine was allowed in his drink. At night his skin was still very dry and hot, his pulse was more accelerated, he had a slight stupor, and was again disposed to rave. The pediluvium was used, a blister was applied betwixt his shoulders, spirit of nitre was added to his drink, and two spoonfuls of the camphorated julep prescribed every four hours.

12th. He raved very much during the night, and his julep occasioned a slight nausea. In the morning his skin was hot, but clammy; his pulse small, quick, and feeble; and he was troubled with slight twitchings of the tendons. Two ounces of the bark decoction N^o. 10, were prescribed every hour, and he was allowed red port in his drink; his medicines sat easy on his stomach, but he had a very restless night.

In the morning of the 13th, he was very sensible, had a gentle moisture on his skin, but his pulse was very weak and feeble. Two scruples of bark, in red wine, were given every two hours, and toast and water, with a little port, was ordered for his drink. He took his medicine five times,

times: in the evening his pulse was more firm; and he had some rest in the night.

14th. In the morning his pulse beat 90; he was in equable diffused sweat; but his tongue was still rough and dry. At night, petechiæ appeared on his arms.

On the 15th and 16th, little or no alteration could be observed.

On the 17th, he was free from feverish symptoms; the petechiæ were gone; but he was very feeble and giddy. The bark and wine were continued for some time longer; however, it was several weeks before he recovered his usual strength.

Another of the recruits was seized with the fever, about the same time, as the former patient. On the third day, the bark was prescribed, although no distinct remissions could be perceived, and he was soon restored to health.

C A S E II.

May 28, 1768, lat. 34 deg. 47 min. S.

THOMAS SPARKS, aged about twenty-six, of a strong healthy constitution, and who had never before been in a warm climate, was seized with head-ach, alternate
flushes

flushes of heat and cold, and pains in his back and limbs. These symptoms were succeeded by drought, restlessness, and oppression; but his pulse was very little accelerated. An emetic, with ten grains of ipecacuanha, and two grains of emetic tartar, was given, which operated very well, and relieved him greatly. In the afternoon he went to bed, and was sweated with warm sage-tea, and spirit of hartshorn.

29th. On the morning he found himself able to walk about; but he was still feeble and oppressed, and complained much of head-ach. The bark was prescribed; however, he went about drooping some days longer, and neglected his medicine.

June 1. In the afternoon he was seized with slight rigors, which were succeeded by heat and drought, and he had a very restless night.

2d. In the morning, when he sent for me, he complained of a very severe head-ach, his skin was exceedingly hot, his tongue parched, and his pulse very small and quick. Half the powder N^o 1, was prescribed every four hours, which operated well, and relieved him considerably.

In the night the powders purged him

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frequently, and he imprudently went out into the open air.

3d. In the morning the feverish heat was greatly increased, and his head-ach was almost insupportable; but his pulse, though quick, was very small. Powders, with camphor and nitre, were prescribed, which only forced a partial sweat; and in the night he became delirious.

4th. In the morning his skin was intensely hot, his eyes looked dull and heavy, his pulse was very quick and feeble, and he had a considerable degree of stupor. His feet were bathed in warm water, blisters were applied to the ancles, wine was allowed in his drink, and two spoonfuls of the camphorated julep were prescribed every two hours. At night he was pretty sensible.

5th. No alteration. His medicines were continued, and the pedilivium used.

6th. The stupor and insensibility rather increased, and his pulse flagged much. At night his countenance was wild and staring, and he was troubled with twitchings of the tendons. A large blister was applied betwixt his shoulders, the camphorated julep was continued every four hours;

hours; and a bolus with theriac, castor, and salt of amber, was given at bed-time.

7th. He was delirious in the night. Towards the morning he had a partial sweat. His tongue was very black and crusted, the twitchings of the tendons more frequent: he dosed much, and was insensible.—Two ounces of the decoction of snake root with some tincture of opium, were prescribed every three hours; and wine was given freely.

8th and 9th, he continued his medicines; however, they produced no alteration.

On the 10th, the stupor and insensibility increased much, with picking at the bed-clothes. One of James' powders was given, and repeated a second and third time, which only forced a clammy moisture on his neck and temples. At night, his pulse was very weak, and so quick that it could not be numbered. Sinapisms were applied to his feet, and a spoonful of cordial julep was prescribed frequently, as he could still swallow.

11th. He lay comatose and senseless, and was covered with cold clammy sweats. The sinapisms were repeated, but had no effect in rousing him.

12th. The twitchings of the tendons and picking at the bed-clothes were more frequent, and he could swallow nothing but a little wine and water. These symptoms increasing, his extremities became cold; his pulse failed; and he was carried off by convulsions in the afternoon of the 14th; without a single symptom of putrescency, or any evident marks of a dissolved state of the blood.

C A S E III.

July 18th, 1768, lat. 14 deg. 10 min. N.

WORTHINGTON PRICE, serjeant, never before subject to any disease, except an obstinate ague, which he contracted by a short residence in a fenny county of England, was seized at night with a feverish paroxysm, which terminated in the morning by a profuse sweat.

19th. When I first visited him, he complained of weariness, head-ach, and low spirits; his tongue was white and foul, and his pulse small and feeble. An antimonial puke was exhibited, which operated well; but in the morning, the feverish
paroxysm

paroxysm returned. Two drams of antimonial wine, mixed in a pint of warm sage-tea, were prescribed at separate draughts, which soon produced a plentiful sweat.

On the morning of the 20th, he was free from fever; but complained of great prostration of strength, and was very much dejected. His ague being formerly removed by the Peruvian bark, and succeeded by obstinate rheumatic pains; from prejudice, he refused taking any of this medicine; but said he was willing to follow any other directions which might be judged proper. The bark was, however, prescribed in a form to cover its taste which sat very easy upon his stomach; but in the night he had an accession of fever.

21st. His head-ach became more severe, and he complained of giddiness when he attempted to walk; being unfortunately told, unless he took the *bark* more regularly, and in larger doses, he could not expect to get soon better; he was angry at being deceived, and absolutely refused taking any more medicine.

On the 24th, he was obliged to confine himself to his hammock. When I visited him, he was very hot and feverish; his

tongue was dry and furred, and he was troubled with head-ach, anxiety, and oppression. One half of the powder N^o 1 was repeated every four hours, which operated well. At night he was in a profuse sweat, and his pulse was more full and soft.

On the morning of the 25th, he had a pretty distinct remission. Two scruples of bark were prescribed in a saline draught; but, when he discovered the medicine, he refused it. In the afternoon, the feverish paroxysm returned; his feet were bathed in warm water; and the saline julep was prescribed. He was delirious in the night.

26th. In the morning, he was sensible, but his skin continued hot and dry. Two ounces of the decoction of snake root with tincture of opium were prescribed every three hours. In the night he rested well, and sweated freely.

On the 27th, he continued calm and easy through the day, and took his decoction regularly, but could not be persuaded to have recourse to the bark. In the night, his fever returned; he was very delirious, got out of his hammock, and ran upon deck.

28th.

28th. His pulse was very quick; his skin intensely hot; and the delirium remained. His feet were bathed; his head shaved; a blister applied betwixt his shoulders; and two spoonfuls of the camphorated gulep, with spirit of *Mintzeri*, were prescribed every two hours.

29th. No alteration. He continued his medicines.

30th. He was both comatose and delirious. His medicines only occasioned a partial sweat; blisters were applied to his ankles; and wine was prescribed freely.

31st. Very little alteration.

August 1. The coma and delirium continued; his lips and teeth were covered with a glutinous crust; and his breath was very offensive. A strong decoction of bark was prescribed, but was swallowed with difficulty. Sinapisms were applied; and he was supported with wine.

2d. No alteration.

3d. Large vivid spots appeared on each foot; his pulse was exceedingly quick and feeble; his countenance horribly ghastly; and his stools very offensive. The bark was tried in clysters, but was not retained.

The following days he lay stupid and insensible, continually muttering to himself, and picking at the bed-clothes. All medicines were laid aside, yet he protracted a miserable existence to the 8th, when his body, soon after death, emitted a very cadaverous smell.

C A S E IV.

July 23d, 1768, lat. 4 deg. 49 min. S.

JOHN VICKARIE, one of the company's recruits, aged eighteen, in the evening, was seized with rigors, head-ach, and pains in his back and loins; he soon became hot and thirsty, and passed a restless night.

24th. In the morning, when I first visited him, his pulse was 100, his countenance much flushed, his skin very hot, and his thirst insatiable; he complained of sickness at stomach, and vomited much bile. A grain of tartar emetic was given at separate draughts, which operated easily. At night, his fever returned with violence; all the former symptoms were aggravated, particularly the pain at the stomach and bilious vomiting. A grain of solid opium was given,

given, and a saline draught was prescribed every two hours in the act of fermentation. He was troubled with the greatest inquietude in the night, and his stomach rejected every thing he drank.

25th. In the morning his fever continued, and the nausea and pain of his stomach were very severe; fomentations were applied, and the draughts repeated, which procured him some ease. At night, the feverish paroxysm run very high, the pain of his stomach was almost insupportable, with incessant vomiting of bile. The pediluvium was used, a cataplasm with theriac, camphor, and three drams of tincture of opium, was applied to the stomach. Soon after this, the pain abated, and he slept for an hour. When he awaked, he called for cold water, which was allowed him in small draughts. In the night he was restless; drank plentifully; and fell into a sweat towards the morning.

On the 26th, he had no distinct remission, his skin continued hot, his countenance was gloomy, and his eyes were of a yellow colour. Two ounces of the bark decoction were prescribed every two hours, which sat easy on his stomach. In the
even-

evening he had a loose stool, and the feverish heat increased. His feet were bathed in warm water, wine was added to his lemonade, and his medicine was continued. In the night he was delirious, but became calm towards the morning.

On the 27th, when I visited him, a gentle moisture was diffused over his skin, but his pulse was small and fluttering. His countenance was exceedingly ghastly, and he was not perfectly sensible. Two scruples of the bark were prescribed every hour. In the afternoon his pulse was better. As the bark had a tendency to run off by stool, tincture of opium was added.

On the 28th and 29th, his fever abated, and in three days more totally left him.

After this, he was seized with an excruciating pain in his right hip, which was removed by the application of a blister. He continued the use of the bark for some days longer, and soon recovered his usual health and colour.

CASE

C A S E V.

July 22d, 1768, lat. 6 deg. 33 min. S.

MR. G——, a cadet, aged about eighteen, for two or three days, had been indisposed with a head-ach, want of appetite, and low spirits. On the morning of the 22d, he was seized with alternate flushes of heat and cold, and pains in his back and limbs. These complaints were succeeded by head-ach, hot skin, and profuse bleeding from the nose. A dose of crystals of tartar and manna was prescribed, which procured him two stools.

On the morning of the 23d, his skin was still hot, his countenance pale, and his tongue foul and white; he had no considerable drought; and his pulse was small, but scarcely quick. Two ounces of the decoction of bark, with ten drops of the diluted nitriolic acid, were prescribed every two hours.

On the 24th, he complained much of head-ach, giddiness, and oppression; his tongue was very dry, his skin hot, and his pulse 100. His medicine was continued, and lemonade with wine was prescribed

scribed for his ordinary drink. At night, the inquietude was greater; his feet were bathed in warm water.

25th. In the forenoon, he was again attacked with the hemorrhage from the nose, which was soon stopped. The blood was very thin, and scarcely tinged the cloth. His pulse became more quick and feeble, and he was very dejected. As he had an aversion to the bark in substance, the draughts were continued as before.

26th. The same, only his tongue was more foul, and his teeth crusted.

27th. No alteration.

28th. Towards night, he was comatose and dosed much, and had another attack of the hemorrhage. A bolus, with theriac, salt of amber and camphor, was prescribed. He sweated some in the night, but had little or no rest.

On the 29th, the heat of his skin continued; his pulse was small and quick, and his breath very offensive. The bark decoction was again prescribed; and as he was costive, a clyster was injected in the evening. However, in the night, he was delirious.

On

On the 30th, he was comatose. He took the bark decoction and wine freely. At night, no alteration; a blister was applied betwixt his shoulders.

31st. He still continued comatose; his pulse was a little better, and the bark decoction was repeated, with a few grains of the powder in each dose.

August 1st, he was very sensible; his pulse began to rise; his blister was dressed, but digested ill.

On the 2d, he was pretty easy. As the bark purged him, a few drops of tincture of opium were added to each dose.

On the 3d, he continued to recover; he had no appetite, but a great craving for wine; it was allowed him freely, and he persisted in the use of his medicines. After this, his appetite began to return, and he recovered gradually.

On the 10th, he fell into a purging, which was removed by a few doses of rhubarb and diascordium. As he was still weak, the tincture of bark was prescribed twice a day.

On the 27th, he was able to go to Calcutta.

CASE

C A S E VI.

Culpee, September 6, 1768.

HENRY POPE, seaman, a young man of a very strong and healthy constitution, was sent, on the 30th of August, 1768, along with some others, to assist the *Ankerwyke*, that passed us in great distress, in her way to Calcutta. The people were employed at hard work, constantly relieving one another at the pumps.

On the 3d of September, he was seized with sickness at stomach, violent head-ach, and bilious vomiting, which obliged him to retire from his duty. When he asked for medical advice, he was ordered to return to his labour, with a hint that his disease was only the effect of drunkenness. Next morning he found himself a little easier; but the head-ach still continued, and he was very weak and feeble. Being affronted at the judgment passed upon him, he made no farther complaints, and was sent with his ship-mates in a boat to return to Culpee. In the afternoon, he was again seized with fever; great agony at

at stomach; incessant vomiting; head-ach; and drought.

September 6th. On the evening, when I first saw him, he complained of the most acute pain at the stomach, which was swelled, very painful, and felt hard to the touch. His head ached violently; his tongue was furred; his countenance yellow and ghastly; and his skin was cold and clammy. He was ordered some warm wine and water, which he immediately rejected with a strong hiccup. A grain of opium and fomentations were prescribed. After this, his skin became warm, but his pulse was small and fluttering. In an hour, the vomiting returned as violently as ever, and he had two purging bilious stools. He drank some warm chamomile tea to cleanse his stomach; a saline draught, with tincture of opium, was prescribed at bed-time; and the saline draughts ordered to be given frequently in an effervescent state during the night: he, however, vomited and purged often.

On the morning of the 7th, his skin, but particularly his temples, felt very hot; his countenance was wild and staring, and his tongue very brown and parched.

Two

Two ounces of an opening mixture, with emetic tartar, manna, and decoction of tamarinds, were prescribed every hour. In the afternoon, he had three easy stools; but the pain in the stomach, and over the whole epigastric region, continued as violent as ever. His skin was cooler, and his pulse better. A grain of opium was given; an anodyne cataplasm applied to his stomach, and a strong decoction of bark was left with his attendant, to be taken as often as his stomach would bear.

In the morning of the 8th, he was insensible at times, and complained of great pain all over the epigastric region. His pulse was very small, quick, and fluttering; his skin hot and clammy; and he frequently applied his hand to his temples. An emollient clyster was injected; his head shaved; the fomentations repeated; and the saline draughts were prescribed, as the bark would by no means sit upon his stomach. Through the day he had several bilious stools; his pulse was irregular, and his skin clammy. He was frequently very sensible, and made rational answers; but, in a moment, he would stare wildly, and become very delirious. His feet were im-
mersed

mersed in warm water and vinegar. At night, he was very sensible; his bowels were still swelled; and he complained of great pain in the region of the liver. The saline draughts and fomentations were continued, and a blister applied to the part affected. In the night he raved much, and purged very frequently.

9th. In the morning, he had short intervals of sensibility; and complained of the most excruciating pain in his stomach, and in the region of the liver. The fomentations were continued, and he took, at separate draughts, six ounces of a decoction of tamarinds, and three drams of Epsome salt*. Through the day he was, for the most part, insensible, and covered with cold clammy sweats. In the afternoon, when I visited him, his breath was very fetid, and he had two offensive stools. The bark decoction was again prescribed, which now sat upon his stomach. At night, when I visited him, he seemed very calm, quiet, and sensible; but, in an instant, began to talk very incoherently; and his face became convulsed. These fits returned frequently; and were succeeded by a delirium, which continued through the
O night.

* Magnesia Vitriolata Ph. Lond.

night. The bark decoction was continued with tincture of opium.

10th. On the morning, he was again very sensible; but his skin was clammy and moist, his pulse weak and fluttering, and he was troubled with frequent convulsive twitchings of the tendons, tremors, and strong hiccup. The bark decoction, with tincture of opium, was still continued; and he was supported with wine: but every thing he took was soon carried off by stool. The mortal symptoms encreasing, nothing farther could be expected from medicines, which were therefore laid aside. At seven o'clock, his pulse failed, he lay speechless, and was carried off by convulsions at night.

C A S E VII.

Culpee, September 8th, 1768.

THOMAS BULLMAN, carpenter's mate, aged twenty, was seized in the morning with rigors, head-ach, and sickness at stomach. These symptoms were soon succeeded by heat, thirst, and restlessness; but his pulse was feeble, and little quicker than natural. An antimonial puke was pre-

prescribed, which discharged much bile. At night, the feverish accession returning, half the powder, N^o. 1, was given at bedtime; he rested ill in the night, but towards morning fell into a profuse sweat.

9th. When I visited him, he was pretty free from fever, but his head-ach still continued, and he was weak, feeble, and giddy. At noon, he was seized with slight rigors; and, as the paroxysm advanced, he turned excessively hot, puked gall, and was disposed to rave. The decoction, N^o. 2, was given, which operated upwards and downwards. At four, a dram of bark was prescribed every two hours, which sat well upon his stomach. Through the rest of the day his pulse was almost natural, but the head-ach and pain of his back were very uneasy. He had little or no rest in the night.

10th. In the morning, he was free from fever. As he had only taken two doses of bark in the night, two drams were exhibited at eight; and a dram was continued in port wine every two hours. He took an ounce by night, and had no exacerbation of the fever.

On the 11th and 12th, he was free from fever, but weak, feeble, and giddy. The bark was still continued. From this time, I did not visit him: he gave over his medicines, and soon suffered a relapse.

20th. In the morning, I found him confined to his bed; he was much exhausted, and complained of great head-ach and a troublesome cough: his countenance was very ghastly, and he had not the least appetite. A vomit was prescribed, which discharged a considerable quantity of viscid bile. At night, his skin became hot and clammy, his cough was very uneasy, and he puked some ropy phlegm. A dose of the camphorated tincture of opium was prescribed at bed-time; however, he passed a very restless night.

21st. In the morning, his skin was cool; he complained of a head-ach, and the cough still continued. Wine was prescribed freely, and he took a dram of bark every two hours. At night, the cough remitted, and the feverish paroxysm returned. The anodyne draught was repeated. He sweated much in the night, the cough was again troublesome, and he got little rest.

On

On the 22d, he was pretty easy, but very feeble. The bark was continued; and his drink was acidulated with diluted spirit of vitriol*.

23d. In the afternoon, he was very hot and restless: his cough increased, and he became sick at stomach. The vomit was repeated.

After this, he began to recover daily; the hectic heat and cough disappeared. The bark, however, was continued for some time longer; and rhubarb was occasionally given, as he became costive.

On the 29th, his complexion and appetite began to return; but it was the end of October before he was fit for duty.

C A S E VIII.

Culpee, Sept. 10th, 1768.

JOSHUA ARCHER, gunner's mate, in the morning was suddenly seized with violent head-ach, sickness at stomach, and pains above his eye-brows. His countenance soon became flushed, his pulse full and strong. The heat of his skin was very considerable, and he continually vomited

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bile

* Acidum vitriolicum dilutum Ph. Lond.

bile. He was bled; but, when six ounces were taken away, his pulse began to flag. The emetic powder, as in the above case, was prescribed. The pain of his stomach was relieved; but he grew more restless: his head-ach became almost insupportable, and his skin very hot. At night, his pulse beat 115. The pediluvium was used, and an antimonial draught was prescribed.

On the morning of the 11th, he had a very severe accession of fever, with pain and sickness at stomach. He took four doses of bark.

12th. The feverish paroxysm returned at three in the morning. When I visited him, he was in a gentle moisture; his tongue was foul; his pulse small, quick, and feeble; and he complained of great head-ach and giddiness. The bark sat easy on his stomach; but by night he had only taken five drams.

On the morning of the 13th, he had a slight paroxysm, but could not be prevailed upon to take his medicine regularly. His fever returned in the night.

On the 14th, he took six drams of the bark.

On

On the 15th, he was free from every complaint, except weakness.

On the afternoon of the 21st, he was seized with a feverish paroxysm, much more severe than ever.

In the morning of the 22d, when I visited him, he was in a profuse sweat, but complained of head-ach; and said he had suffered so much in the night, that he would now willingly take any medicine. The bark was again prescribed every three hours.

On the 23d, he complained of a cough, and had a slight pain in his right side. The bark was continued, with a few grains of rhubarb; and he seemed to recover fast.

On the 28th, he was feverish, much dejected, and the pain under the right hypochondrium was troublesome. A blister was applied to the part affected; the bark was continued three times a day, with a cupful of an infusion of chamomile flowers with salt of tartar.*

On the 31st, he was cool; the cough, and pain in his side were removed; and he was able to go about. He continued

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his

* Kali præparatum Ph. Lond.

his medicine for three days more, and, though weak, returned to duty.

C A S E IX.

Culpee, Sept. 13th, 1768.

JAMES HUTTON, seaman, aged twenty-five, of a strong constitution, in the morning, was seized with giddiness, head-ach, violent pain at the pit of the stomach, and fell down in a fainting fit. As he continued insensible for some time, a vein was opened: when four ounces of blood were drawn, he came to himself, and complained of great weakness and violent head-ach. He had a reaching to vomit; his pulse soon became more full, and his countenance flushed. The decoction, N^o. 3, was prescribed. About eleven, the paroxysm was greatly increased; the heat of his body became intense; he was very restless, had slight twitchings of the tendons, and seemed disposed to rave. His medicine discharged much bile by vomit and stool, and sweated him profusely. At night, he was easier; but still complained of great feebleness and head-ach.

On

On the morning of the 15th, he had a feverish paroxysm, with great inquietude and thirst: his pulse beat 100, and his tongue was foul and dry. The purging decoction, N^o. 5, was prescribed, which operated several times. In the afternoon, a profuse sweat relieved him considerably. A draught, with two ounces of the bark decoction, and a scruple of the powder, was prescribed every hour, which sat easy upon his stomach.

15th. He passed a very restless night; however he continued his medicine, and, towards the morning, had a purging bilious stool. When I visited him, his skin was cool, but clammy; his pulse small, but very little quicker than natural: his breath was offensive, and his countenance fallow and dejected. A dram of bark was prescribed every hour and a half, in a glass of port wine. At night his pulse was better; he was in a warm sweat, and had taken seven doses of his medicine.

16th. In the morning, though weak and feeble, he was perfectly free from fever. The bark, with wine, was repeated every two hours. He continued its use, thrice a day, for some time longer: his
appetite

appetite began to return; and, in a fortnight, he was fit for duty.

C A S E X.

Culpee, September 16, 1768.

——, of a weak and delicate constitution, long subject to a train of nervous symptoms, for which, in his own country, under the direction of an eminent physician, he had tried every remedy in vain. As the only remaining resource, he was advised a long sea voyage and a warm climate, which soon relieved his former complaint. Being in the way of infection, on the 16th of September, he was seized with the common symptoms of fever: he went to bed, and drank some warm tea, and vomited abundantly. In an hour, the feverish paroxysm increased exceedingly. A grain of emetic tartar dissolved in rice-gruel was taken at separate doses, which sweated him very profusely; but, as no remission followed, one half of the powder, N^o. 1, was prescribed at bed time: he continued restless through the night, his head-

head-ach increased, and he was disposed to rave.

On the morning of the 17th, his skin was cool, his pulse pretty natural, but he still complained of great oppression, head-ach, and faintness. One dram of the bark with one scruple of soluble tartar* was given every hour. In the afternoon, he had two stools, which occasioned a great dejection of spirits: his medicine was therefore changed, and a dram of bark, in a glass of port wine, prescribed every two hours; however, in the night, he had another accession of fever, and continued restless: but, towards morning, he fell into a profuse sweat.

On the morning of the 18th, he was free from fever, but very weak, feeble, and giddy. His arms and breast were full of miliary eruptions. Being confined to a small apartment from the first attack, he was removed to the great cabin, where, enjoying a more free air, he found himself instantly relieved. Fearing another attack of his fever, he took two drams of the bark in the morning, and a dram regularly every hour, till one ounce and a half were used. This large quantity sat easy upon
his

* Kali tartarizatum Ph. Lond.

his stomach, and procured one copious stool.

On the morning of the 19th, he was pretty free from every feverish symptom; but was still very feeble and faint. About mid-day, he was seized with dimness of sight; and saw objects double: his mouth and jaws were affected; and he faltered in his speech. These, having formerly been symptoms to which he was subject, did not much alarm him. The bark and wine were continued every three hours; and, at night, he found himself perfectly easy, though weak. From this time, the fever left him: but he fell into profuse sweats; his appetite did not return; and he was troubled with acidity and low spirits. For these complaints, he took magnesia; asa foetida; bark and bitters. He used the cold bath; and in a month was restored to his usual health.

C A S E XI.

Culpee, Sept. 24th, 1768.

WILLIAM JOHNSTON, seaman, a young man of a delicate constitution, who had never

never before been in a warm climate, in the morning was seized with head-ach, sickness at stomach, and vomiting of bile, which he encouraged by drinking warm tea. At ten, when he sent for me, he was in great agony from the pain in his stomach; and was possessed with the greatest fear of dying immediately: his countenance was flushed, his skin exceedingly hot, and every thing he drank was rejected. Fomentations were applied to the region of the stomach, and a grain and half of solid opium prescribed. In an hour and half, the pain of the stomach remitted, but the feverish paroxysm increased. The decoction, N^o. 2, with only one grain of tartar emetic, was ordered in separate draughts, which discharged abundance of bile upwards and downwards, and sweated him profusely. At night, his skin was cool, and his pulse pretty regular; but, when out of bed, he was feeble and giddy. Two ounces of the bark decoction were ordered every hour.

25th. In the beginning of the night, he had some rest: in the morning, the feverish paroxysm returned, and he vomited frequently. When I saw him, he was
in

in a clammy sweat, the nausea, anxiety, and restlessness still continued, with a fullness at his stomach, and aching above his eye-brows. He took the prescription, N^o. 5, and, without waiting for the full effects of the medicine, a dram of bark was given every two hours, in port wine. At night, he had three stools; he was weak, feeble, and faint. The bark was prescribed every hour; occasionally, with a few drops of tincture of opium.

26th. As he was afraid of another attack, he took his medicine six times in the night. In the morning, his skin was cool, and he was free from head-ach, but complained of great feebleness and giddiness, when in an erect posture. The bark was continued every four hours, with wine: the return of the fever was prevented, and he recovered daily.

In the beginning of October, he was seized with the dysentery, which was very frequent on board. As I did not attend him, I do not know how he was treated.

On the 12th, being sent to the hospital, he died in his passage to Calcutta.

CASE

C A S E XII.

Calcutta, October 18th, 1768.

MR. M——, aged twenty-two, after attending a sale of clothes, belonging to some deceased gentlemen, and walking home in the heat of the sun, was seized with slight chilly fits, head-ach, and sickness at stomach. His skin soon became hot, his countenance flushed, and the pain of his head increased, with difficulty of breathing, and heavy sighs. Half the powder, N^o. 1, was given every hour, which operated well. In the night, all his complaints increased; the paroxysm ran high; and he became delirious.

On the morning of the 19th, he was sensible, but still complained of head-ach, pains in his back, thirst, oppression, and inquietude: his tongue was foul, and his pulse 100, small, and quick. As he refused the bark in substance, two ounces of the decoction were prescribed every hour; but having an aversion to the medicine he did not take it. In the afternoon, his skin was very hot; his pulse 115; and the paroxysm became violent.

Five

Five grains. of the powder, N^o. 1, were given in a saline draught, and the pediluvium used. At night, he was delirious. The powder was repeated; and the bark left with his attendants, to be given as often as he could be prevailed upon to take it.

On the morning of the 20th, his skin was pretty cool, his pulse still quick, and his tongue foul and parched: he had a gloomy look, and seemed to be affected with stupor. As he could not be prevailed upon to take the bark, it was changed for the saline draughts. At night, he became very restless; had a wild countenance, and appeared disordered in his senses: his feet were bathed; a large blister applied betwixt his shoulders; and a draught, with a quarter of a grain of emetic tartar, was prescribed every four hours. In the night, he was very delirious and unmanageable.

On the morning of the 21st, his pulse was small, quick, and fluttering; his skin clammy; his teeth covered with a black crust; and he was comatose and delirious at times: his breath and all the excretions were very fetid. He was taken out of

of bed and had his linen changed, and his feet immersed in warm water. The blister discharged well, and was dressed; the bark was again tried, and he swallowed one dose with great difficulty. Through the day, his pulse frequently varied; and he continued comatose, insensible, and stupid. At night, he had frequent twitchings of the tendons. As he now refused every medicine, sinapisms were applied to his soles.

On the 22d, he continued in the same state of insensibility; his tongue was black; his breath exceedingly offensive; and the blistered part had a gangrenous appearance. At night, his extremities became cold; his skin was clammy; his stools ran off involuntarily; and, about four next morning, he died in convulsions. His body, soon after death, was covered with livid spots; and the room in which he lay was very offensive, although it was frequently sprinkled with camphorated vinegar.

Mr. L—— having accompanied the former gentleman, whose case is related, was seized at the same time with the fever. After cleansing the first passages, he took the bark in large doses, and soon recovered.

C A S E XIII.

April 9th, 1771, lat. 4 deg. 33 min. N.

HENRY CASTLES, gunner's mate, aged thirty-six, brought up to the sea, and never before subject to sickness, last night, at twelve o'clock, was seized with rigors, pains in his back, heat, thirst, and frequent vomiting. These complaints continuing, in the morning he took half a grain of emetic tartar. When I saw him, his countenance was flushed, his skin hot, and his pulse 96; his stomach was tense, swelled, and painful to the touch; he was in the utmost agony, and continually vomited bile. A grain of opium was given immediately; fomentations were used; and, two hours after, the purging decoction, N^o. 5, was prescribed. The nausea abated, and he retained the physic, which procured him four bilious stools. At night, he was in a profuse sweat; his pulse beat 80; and the pain of his stomach abated. The bark was prescribed, but his stomach did not retain it.

10th. At two in the morning, he had a violent accession of fever, with unsufferable

ble head-ach, nausea, and vomiting. At eight, when I saw him, his pulse was very small, quick, and obscure: he complained much of head-ach and giddiness; his countenance was gloomy, and his eyes red and watery; and the pain, tension, and sickness at stomach remained. Half an ounce of Epsome salt was prescribed at two separate draughts; and two hours after, he began the bark decoction, with the tincture. At night, he had taken six doses of the decoction, and had two purging stools; his stomach was easy, less swelled, and his pulse was more firm. Fifteen drops of the tincture of opium were given in the bark decoction at night.

11th. The feverish paroxysm returned at twelve last night. On the morning, when I visited him, his skin was clammy; he complained of great anxiety, thirst, head-ach, and disorder at his stomach, which was painful and much swelled. Large stupes of flannel were wrung out of a warm fomentation, and applied to the abdomen; the salts were repeated as yesterday; and two drams of powdered bark were added to eight ounces of the decoction, which was given, every hour, after

the first stool, in as large doses, as his stomach would bear. At night, he was easy, and the whole of his medicine sat well upon his stomach. It was continued through the night, with a few drops of the tincture of opium to prevent it from running off by stool.

12th. He had a slight paroxysm last night, and awaked calm in the morning, but was very weak, feeble and giddy. A dram of bark was prescribed every two hours in red port; at night, he had taken an ounce; was much easier, and in better spirits. After this, he recovered daily. He was allowed a nourishing diet from the captain's table; continued the bark and wine thrice a day; and, on the 26th, though weak, returned to duty.

On the 1st of May, he relapsed: the feverish paroxysm was very severe, attended with great pain and heat at the pit of his stomach, and vomiting of bile; and his eyes and countenance became yellow, as in a jaundice. After cleansing the first passages by the prescription, N^o. 5, a grain and a half of solid opium were given, and the bark prescribed every hour in dram doses. By these means, the next paroxysm was
miti-

mitigated; and his fever totally left him on the 3d. He continued his medicine three times a day to the 6th. Having omitted the bark, on the 8th he was again seized with a feverish paroxysm, continuing for twenty-four hours, and which was not removed till he took an ounce of the same medicine. After this, his stomach was very weak; his countenance continued fallow; but, by the use of bark, bitters, and rhubarb, he was restored to health; and, on the 19th, returned to duty.

C A S E XIV.

June 2d, 1771, Lat. 34 deg. S.

ROBERT LAVENDER, aged about thirty, in the afternoon, was seized with shivering, and pain in his back and limbs. When I visited him, his skin was exceedingly hot, his pulse quick, full, and soft; and he complained much of head-ach, and thirst. The antimonial powder, N^o. 1, was prescribed, which puked him several times. His fever still running high, half a dose was repeated at bed-time.

On the morning of the 3d, the feverish symptoms continuing, the decoction, N^o. 2,

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was

was prescribed, which purged him several times, and sweated him profusely. In the afternoon, his skin was pretty cool; his pulse 90; but he still complained of faintness and head-ach. A dram of bark was given every hour in a saline draught, which sat well upon his stomach. In the night, he had an accession of fever, and, contrary to directions, omitted his medicines.

4th. In the morning, his skin was hot, but a little moist, and his pulse 100. His eyes were red and watery; his tongue and teeth very foul; and he was troubled with the greatest anxiety and restlessness. A dram of bark was prescribed every two hours, and his drink was acidulated with crystals of tartar. At four in the afternoon, he had taken five doses of his medicine; and his pulse beat 115. At seven, he fell into a profuse sweat. The head-ach continuing severe, his feet were immersed in warm water. At twelve, he still sweated plentifully, the head-ach and thirst abated, and his pulse fell to 96. At night, he had taken an ounce of the bark; it was therefore only prescribed every four hours.

5th

5th. He sweated and rested pretty well in the night. This day his skin was perfectly cool, his pulse 80, and his tongue white and moist; he had little or no thirst; but complained of giddiness. As the bark began to purge him, he was advised to continue it every two hours, with tincture of opium, which he neglected. At four in the afternoon, he had an exacerbation of fever, with very great heat, head-ach, and thirst. At eight, he was in a profuse sweat, and his pulse beat 100. Two ounces of the bark decoction, with five drops of tincture of opium, were prescribed every two hours.

In the morning of the 6th, he was quite free from fever; the redness of his eyes had disappeared; but he was still very weak, feeble, and giddy. In the afternoon, his fever returned; his pulse rose to 100; but his complaints terminated in a sweat. He took six drams of the bark in the day,

On the morning of the 7th, his skin was again hot, and his pulse a little frequent. In the afternoon, he had great thirst and was feverish for an hour; but soon after,

he fell into a profuse sweat. He took six drams of bark in the day.

On the 8th, he was free from fever, but was exceedingly weak, giddy, and faint. The bark was continued, and a bottle of red port allowed in twenty-four hours, in his sago, rice-gruel, and drinks. After this, he fell into profuse sweats in the nights, which were removed by the bark and tincture of roses. On the 15th, he was able to return to duty, and soon recovered his strength.

C A S E XV.

July 4th, 1771. lat. 6 deg. N.

JOHN CONNOR, one of the company's recruits, who was never before in a warm climate, on the second of this month, was seized at night with chilness, which was succeeded by violent head-ach, thirst, quick pulse, and other symptoms of fever. He got a few doses of the antimonial powder, N^o. 1, from my assistant, which sweated him profusely. Next day he was free from fever.

On

On the morning of the 4th, when I first saw him, his skin was moist and cool; his pulse beat 90; his tongue was foul and furred; and he complained of great giddiness and head-ach. Two scruples of the bark were prescribed every hour in port wine, which sat easy upon his stomach. At four in the afternoon, his skin became very hot, and his pulse beat 112 in a minute, soft, and small. At night, he was in an equable sweat, his pulse fell to 84, but he looked very stupid. He only took half an ounce of the bark.

5th. About one in the morning, he had two purging stools, was delirious, and refused his medicine. When I saw him, his skin was moist, his pulse beat 80, soft, and full; he was very sensible, complained of great head-ach, and had strong pulsations in the carotid arteries. His head was shaved, and the pediluvium used; the bark was continued, every two hours, in the saline draught, with a few drops of tincture of opium, to prevent it from running off by stool. At eleven P. M. his head-ach was more severe; his pulse quicker and more feeble, and he seemed to be slightly affected with stupor.

6th,

6th. He dosed some in the night, but had no refreshing rest. In the morning, he was perfectly sensible, but the head-ach and pains in his temples remained; his pulse beat 96; his tongue foul, black, and furred. His temples were bathed with vinegar and water; the pediluvium was used frequently; and the bark was regularly continued. He was in a gentle moisture through the day; at night, he was free from head-ach; his pulse beat 84, very regular and soft.

He rested very well in the night, and continued quite calm and free from fever. On the morning of the 7th, he was weak, feeble, and giddy, when out of bed. Port wine was allowed; and the bark was repeated every three hours.

On the 8th, he continued to recover.

On the 9th, he went upon deck, and had a return of his head-ach; and fever; which soon again disappeared by the use of the bark.

After this, he was allowed a nourishing diet; and was soon restored to his usual strength.

CASE

C A S E XVI.

August 28th, 1771, lat. 6 deg. 41 min. N.

ROBERT ENGLISH, carpenter's mate, aged twenty-three, very liable to fevers of a few days standing, when in a warm climate; on the 27th of August, 1771, was seized with chills; violent pain in his head; back; and betwixt his shoulders; and alternate flushes of heat and cold continuing most part of the night. Four days before this he had been bled, and had taken two doses of salts, on account of an inflammatory gonorrhœa.

On the 28th of August when I was first made acquainted with his complaints; his skin was intensely hot, his head ached violently; his tongue was dry, and parched; his pulse beat 112, pretty strong, but soft. Half the powder, N^o. 1, was prescribed every three hours, which discharged much bile, and sweated him profusely.

On the morning of the 29th, he was still exceedingly hot and feverish. As the antimonial had not opened his bowels, a dose of salts was ordered, which operated well and relieved him considerably. About
eleven

eleven at night, the feverish paroxysm returned with violence, during which he complained of great inquietude; his pulse beat 90, and was feeble, and oppressed: his feet were bathed in warm water, and lemonade was ordered for his common drink.

On the morning of the 30th, all the symptoms were mitigated; his pulse returned to its natural standard; and he only complained of great prostration of strength. A dram of Peruvian bark was prescribed at nine, which sat easy upon his stomach. In an hour, the feverish paroxysm returned; his head-ach became unsupportable; the muscles of the scapula, and almost universally over the body, were affected with spasmodic twitches. His pulse varied much, beating sometimes 90, sometimes 115, but was small, soft, and feeble. As he was in the greatest agony, a full dose of tincture of opium was given. After the use of warm fomentations, he fell into a profuse sweat, and found himself easy: he continued the use of the bark, and before night had taken about an ounce. About two in the morning, he had another accession of fever, which continued three hours;

hours ; during which time his stomach rejected the bark.

On the morning of the 31st, he had a very distinct remission. His pulse beat 86 ; his tongue was sore, and covered with a black crust ; and he complained of the greatest prostration of strength, and dejection of spirits. A dram of the bark was continued regularly till twelve ; when he was seized with the most violent head-ach ; his eyes became dull and heavy, and his skin very hot. His pulse beat 96 ; he had continual twitchings of the muscles of the neck ; tremors, and twitchings of the tendons ; and complained of great dimness of sight. His feet were bathed ; a large blister was applied to the head ; an opiate prescribed ; and the bark was repeated, which sat well upon his stomach. The symptoms becoming more violent, his feet were frequently immersed in warm water, and he continued sensible. About nine at night, his head-ach remitted ; he saw distinctly ; and his skin was moist ; but the tremors still remained in a slight degree. As he had taken a large quantity of the bark in the day, two spoonfuls of the cam-

camphorated julep were prescribed every two hours.

September 1st. Towards the morning, he sweated profusely, and when I visited him, he was free from fever; but was exceedingly weak and faint. His breath was offensive, and his tongue dry and black. He was allowed port wine; and, in order to prevent another attack, he willingly continued the use of the bark. By twelve at night, he had taken ten drams, and was disposed to sleep. He rested well in the night.

On the 2d, his skin was cool, and he had little or no head-ach; but complained of giddiness and dimness of sight, when he moved out of his hammock. He eat some pumkin tart at dinner; and took a dram of the bark regularly every four hours.

For the three following days, he apparently kept recovering.

On the 7th, at night, when the weather was very close, he went upon deck, but was immediately ordered below.

From this to the 12th, he drooped much, was very low spirited and dejected,
and

and could not be persuaded to take his medicine.

On the 13th, his fever recurred; his pulse beat 100; his tongue became sore, stiff, and swelled; and aphthæ appeared in his throat.

On the 14th, a black crust fell off from his tongue; and exposed to view several small ulcers. A gargle, with honey and barley-water, was prescribed.

From this to the 16th, little alteration happened. He only had been prevailed on to take from three drams to half an ounce of the bark daily.

On the 16th, he again appeared to be free from fever, but was exceedingly extenuated; and reduced to the greatest pitch of weakness. The aphthæ in his mouth, and the foreness of his tongue remained. He had been allowed wine freely, which, now, he did not relish; therefore, he was indulged in his desires, whether he called for a little punch, or porter. He continued the bark, taking about three drams every day.

On the morning of the 19th, he was taken out of bed, conversed chearfully, and

and seemed to be much better than usual. About eleven in the forenoon, in an instant, he found himself indisposed, and desired to be assisted to his hammock. He was seized with convulsions; his extremities became cold; he lay speechless, and had all the appearances of approaching death. A spoonful of cordial volatile julep, was poured into his mouth frequently; and bottles of warm water were applied to his feet. In three hours, he returned to his senses. After this, he became comatose; and his pulse was very small, quick, and irregular. A blister was applied betwixt his shoulders; the julep was given at times; and he was supported with wine. His strength and spirits seemed now to be too much exhausted to expect any thing from medicines. From this time, the convulsive fits returned frequently.

On the 23d, he purged a considerable quantity of putrid bilious matter: he lay comatose; insensible; and died in the evening.

Upon opening the abdomen, the omentum was found very much wasted, but what remained of it was found; the liver was

was in a natural state, and the gall-bladder contained an ounce of dark-coloured bile. All the intestines seemed sound, except the duodenum, which was corrupted for several inches; and contained some ounces of fetid matter, resembling a mixture of pus and bile. On examining the encephalon, the meninges, brain, and cerebellum, were of a natural appearance; and the cortical and medullary substances were found and bore handling better than in most subjects: but in the left ventricle there was found about half an ounce of bloody serum. The cavity of the thorax was not examined.

C A S E XVII.

Canton, December 18th, 1771.

MR. AUDLEY's servant, a young man of a healthy constitution, was seized with rigors, pain in his head and back, succeeded by a feverish paroxysm, which did not terminate in a regular remission. His surgeon had given him an emetic and a purge. He was bled on the 17th of December,

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and some doses of emetic tartar were prescribed, which purged briskly.

On the 18th, I visited him along with Mr Gowdie, Surgeon of the *Horsenden* Indiaman, and we found him in the following condition. His countenance was very gloomy; and his eyes dull; his tongue black and furred; and his throat full of aphthæ. He complained of continual nausea; strong hiccup; and difficult deglutition. His pulse beat 120, strong and soft: he had frequent tremors, with twitchings of the tendons. Two ounces of bark decoction, N^o. 10, with tincture of opium, were prescribed every hour, which he retained; and he was ordered weak cinnamon-tea for his drink. At night, his pulse was very small and quick; and he became delirious. The pediluvium was used; and his medicines were continued. He was very insensible in the night; and towards the morning had two purging stools.

19th. In the morning, when we visited him, he lay comatose; but answered questions rationally, when roused. The aphthæ in his throat were more numerous, with a lard-like appearance on the

the top. His tongue was swelled and more furred; the twitchings and hiccup continued; and the tears ran off involuntarily; but his pulse was pretty firm, and beat 110. The bark decoction was continued, with half a dram of the powder. At night, he became insensible; his pulse was 118, and he swallowed with difficulty. He continued delirious in the night.

On the morning of the 20th, he lay calm and quiet; his pulse beat 100; the fauces and throat were more thickly covered with aphthæ; and his breath was fetid. The bark draughts, with tincture of opium, were continued; his head was shaved; and a detergent gargle prescribed. At night, his fever ran high; and the hiccup was very strong. The bark decoction, with tincture of opium, was repeated, and fifteen grains of musk given in a draught at bed-time.

21st. Towards morning, he purged frequently. When we visited him, he was pretty sensible; but his pulse was still very quick; his skin hot; his tongue dry and black; his teeth and lips covered with a tenacious slime; and the hiccup and twitchings of the tendons were more frequent

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than ever. The musk draughts, with ten drops of tincture of opium, were continued every six hours; and, in the intervals, the bark decoction, with tincture of opium, was given as before. His medicines sat easy upon his stomach. Through the day, he was free from hiccup, and twitchings of the tendons; and at night was in a warm diffused sweat.

22d. Last night, he had two purging stools; and was insensible at times. In the morning, he was calm; the hiccup was severe; his mouth was very sore; and he flavered much. As all the excretions were now very offensive; the room in which he lay, which had been kept very cool, was ordered to be frequently sprinkled with vinegar. The musk and bark draughts were still continued.

From this time till the 25th, I did not visit him: the hiccup and twitchings of the tendons were less frequent; mitigations were still observable in the day-time: but, at night, the exacerbations of fever always returned, which induced Mr Gowdie to give him a large dose of opium at bedtime, besides the tincture of opium in his bark draughts; yet, notwithstanding,
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the periodical looseness in the morning carried off a considerable quantity of the medicines he took in the day.

25th. The aphthæ appeared much more enlarged; his tongue was swelled and ulcerated; and the acrid saliva began to corrode the left angle of his mouth. His breath was exceedingly offensive, and his countenance very ghastly.

26th. He purged frequently; and the ulcer in the corner of his lip bled at times.

27th. Petechiæ appeared on his neck and breasts.

29th. Large variegated spots, like bruises, were observed on his legs and arms; and on his ancles, where blisters had been applied, there appeared slight mortifications.

30th. Sloughs, from the aphthæ, began to be thrown off; the salivation still continued; and as the ulcer in the corner of his lip became deeper, and looked worse, he was turned on the opposite side. For some days past, the hiccup and twitchings of the tendons appeared frequently. He took the musk draughts occasionally, and continued the bark decoction, with a little powder, and tincture of opium, regularly.

His drink was cinnamon-tea, with red port; and his strength was supported by a very free use of wine in his sago and panado. However, the periodical looseness still returned in the mornings.

31st. The right angle of his mouth began to ulcerate; his tongue was very sore, but his fever had considerably abated.

January 1st. The petechiæ began to disappear; the vibices were of a better colour; and the aphthæ sloughed off. For two days past he had taken an ounce of the bark in powder, and twenty-four ounces of a strong decoction daily, which he digested well.

On the morning of the 2d, he was seized with a very severe hiccup, and vomited and purged much viscid slime. When we saw him, he was much fatigued with the profuse evacuations; his pulse was small and fluttering; and he was sensible, but exceedingly dejected. The nausea, hiccup, and purging returned with violence. Judging these to be only symptomatic from foulness of the stomach and bowels, half an ounce of the tincture of ipecacuanha was ordered in separate draughts of chamomile-tea, which he got over with
much

much gulping; but which operated, and brought up a considerable quantity of viscid slime and black floughs.

3d. His pulse beat 84, and he was free from feverish symptoms, but greatly exhausted. The vibices were almost all gone.

4th. In the morning the hiccup returned with violence: he puked and purged several times, and his pulse was so feeble as scarcely to be felt. The musk draughts, with tincture of opium, and the bark, were continued; and he was supported with wine. These complaints returned on the 5th.

6th. In the morning, the hiccup increased; and he vomited much black slime, which was very offensive. As the reaching to vomit continued, it was encouraged by a strong infusion of chamomile. After this, he was supported with mulled wine; and, his extremities becoming cold, bottles of warm water were applied to them. The musk draughts, with tincture of opium, were continued; and the decoction of the bark sat easy upon his stomach the remainder of the day. At night, his pulse was pretty firm.

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7th.

7th. The hiccup was troublesome at times, and never entirely left him till the 11th. The musk draughts, with tincture of opium, were repeated occasionally, which always procured sensible relief; and the bark decoction did not run off by stool.

From this time, he gradually recovered; however, his intellects were much disordered; and he was subject to very ridiculous fancies for some weeks: but, as he regained his strength, his judgment returned.

On the 10th of February, when he sailed for England, his complexion was healthy: and, though still weak, he was in excellent spirits.

During the course of the fever, this patient took above fourteen ounces of bark in powder; and two pounds more made into decoction.

C A S E XVIII.

Wampoa, December 17th, 1771.

MR. N.—, on the 9th of December, was seized with a regular tertian. The paroxysms were severe; but, at first,

first, the intervals were distinct. Having undertaken his own cure, by an insignificant prescription recommended by a friend, the ague changed its type, the remissions became imperfect, and it was accompanied with very severe quotidian exacerbations.

On the morning of the 17th, he was seized with slight rigors; and the paroxysm increased, with great heat and sickness at stomach. When I first visited him, at two in the afternoon, his pulse beat 120; his skin was intensely hot and dry; his tongue furred; he was comatose, and had slight twitchings of the tendons. Half the prescription, N^o. 1, was given every hour. The stupor still encreased, and his countenance became wild and staring. At seven, he fell into a profuse sweat, which continued till twelve, but did not terminate the feverish paroxysm. A draught, with twenty-five drops of tincture of opium, was prescribed; and two ounces of a strong decoction of bark were directed to be given every hour in the night, and a dram of the powder, as soon as his stomach would bear it.

At

At ten, next morning, he had taken eight ounces of the decoction and three drams of the powder. He was free from fever, but his head-ach remained. A dram of bark was ordered every hour in port wine, which he continued regularly till night. By these means, a return of the fever was prevented, which in all probability, would have proved fatal; but, as he was still very weak, half an ounce of the bark was taken daily for some time.

22d. He was able to go to Canton; and was soon afterwards restored to his usual health.

C A S E XIX.

May 21st, 1772, lat. 34 deg. 52 min. S.

JOHN CHANKPUR, on the 11th of May, 1772, was seized with a feverish paroxysm, which terminated by a profuse sweat. In the remissions, he was free from fever, but was afflicted with very severe head-ach. After the exhibition of an emetic, he took the bark in large doses, and returned to duty on the 15th.

After he gave over the bark, he found himself much indisposed; was low spirited; had

had frequent irregular shiverings; and unremitting head-ach.

May 21st. In the afternoon, when I visited him, his pulse was very small and quick; his tongue foul; his countenance fallow; and he was weak, giddy, and much dejected. A gentle emetic was prescribed, which relieved him considerably; but, as his skin continued hot, a draught, with antimonial wine and tincture of opium, was ordered at bed-time.

On the morning of the 22d, he was seized with rigors; complained of great prostration of strength and violent head-ach: his pulse was small and feeble; and the heat of his skin below the healthy standard. At eleven, his pulse beat 112, was very weak and fluttering: his extremities became cold, and he swallowed with difficulty. His feet were bathed in warm water; a large blister was applied betwixt his shoulders; and a spoonful of volatile cordial julep was given frequently. In two hours, he became warm, and fell into a gentle sweat; but still complained of great head-ach. A dram of bark was prescribed every two hours in red port. At night, he had taken six drams; his pulse was more firm, and beat 100 in a minute.

23d. He was pretty free from fever: his blister had operated well. The bark was continued; however, at night, his pulse was accelerated; his skin hot; and he had considerable thirst.

On the 24th, his skin was cool; his pulse natural; and the head-ach left him. The bark was continued; and he was allowed a pint of Madeira in the day.

On the 25th, he was free from every complaint, except weakness: his appetite began to return; and he was gradually restored to health.

END OF THE FIRST VOLUME.



